

RICHARD RATHBUN.

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United States. Dept. of the Treasury. RICHARD RATHBUN.

LETTER

FROM

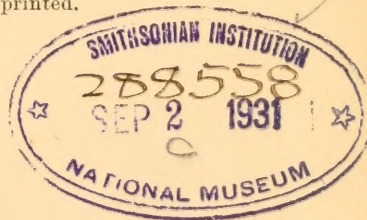
THE SECRETARY OF THE TREASURY,

TRANSMITTING,

IN RESPONSE TO THE HOUSE RESOLUTION OF THE 22D INSTANT, A COPY OF
THE REPORT OF HENRY W. ELLIOTT ON THE CONDITION OF THE FUR-
SEAL FISHERIES OF ALASKA, TOGETHER WITH ALL MAPS AND
ILLUSTRATIONS ACCOMPANYING SAID REPORT.

Elliott

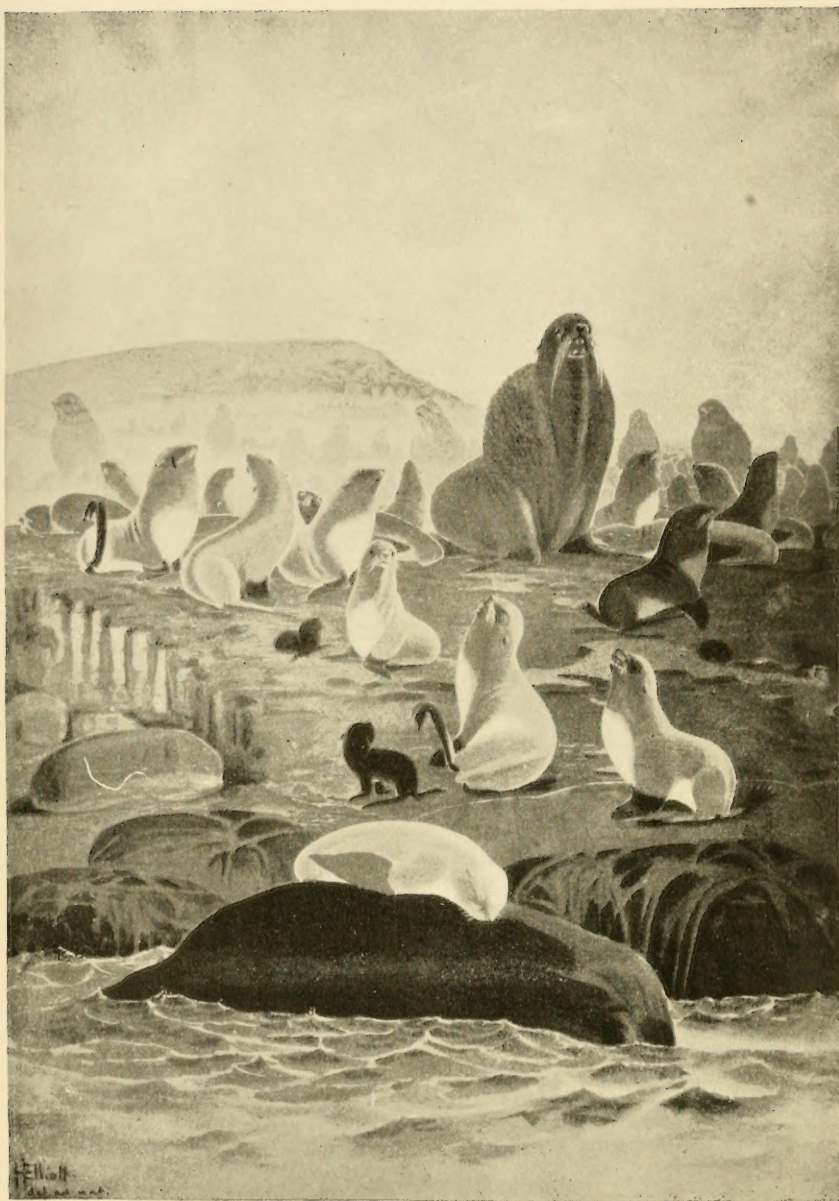
JANUARY 27, 1896.—Referred to the Committee on Ways and
Means and ordered to be printed.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1896.

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A drawing from nature by the author.

A GROUP OR HAREM OF FUR SEALS (*Callorhinus ursinus*), SAINT PAUL ISLAND,
JULY 13, 1890.

Old bulls 7 feet long, weight 400 to 600 pounds; adult females 4 feet long, weight 80 to 100 pounds. These old bulls have been here without leaving their stations for a moment since the 5th to 20th of May; they will have reduced their weight to less than 200 or 250 pounds by the end of this month; the females feed at frequent intervals and never lose their weight.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

TRANSMITTING,

In response to the House resolution of the 22d instant, a copy of the report of Henry W. Elliott on the condition of the Fur-Seal Fisheries of Alaska, together with all maps and illustrations accompanying said report.

JANUARY 27, 1896.—Referred to the Committee on Ways and Means and ordered to be printed.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., January 25, 1896.

SIR: I have the honor to acknowledge the receipt of a copy of House resolution, dated the 22d instant, wherein I am requested to furnish the House of Representatives with a copy of the report of Henry W. Elliott, made pursuant to the order of special act approved April 5, 1890, on the condition of the fur-seal fisheries of Alaska, together with all maps and illustrations accompanying said report, as submitted to the Secretary of the Treasury on November 17, 1890.

In reply thereto a copy of the report in question and its original inclosures are transmitted herewith. The original inclosures are forwarded, instead of copies, at the request of the author of the report, who claims that the original color maps should be sent, instead of photographic copies, as the latter fail to express the idea involved.

With the report is transmitted also an original paper forwarded to this Department on the 2d of February last by Mr. Elliott, which purports to be a transcript from his field notes in 1874, and which, owing to its complicated character, can not be copied without recourse to photographic or electrotyping processes. The paper referred to has been inserted by Mr. Elliott on page 29 of the inclosed copy of the report.

If practicable, the return of the inclosed original documents to the files of this Department is requested.

Respectfully, yours,

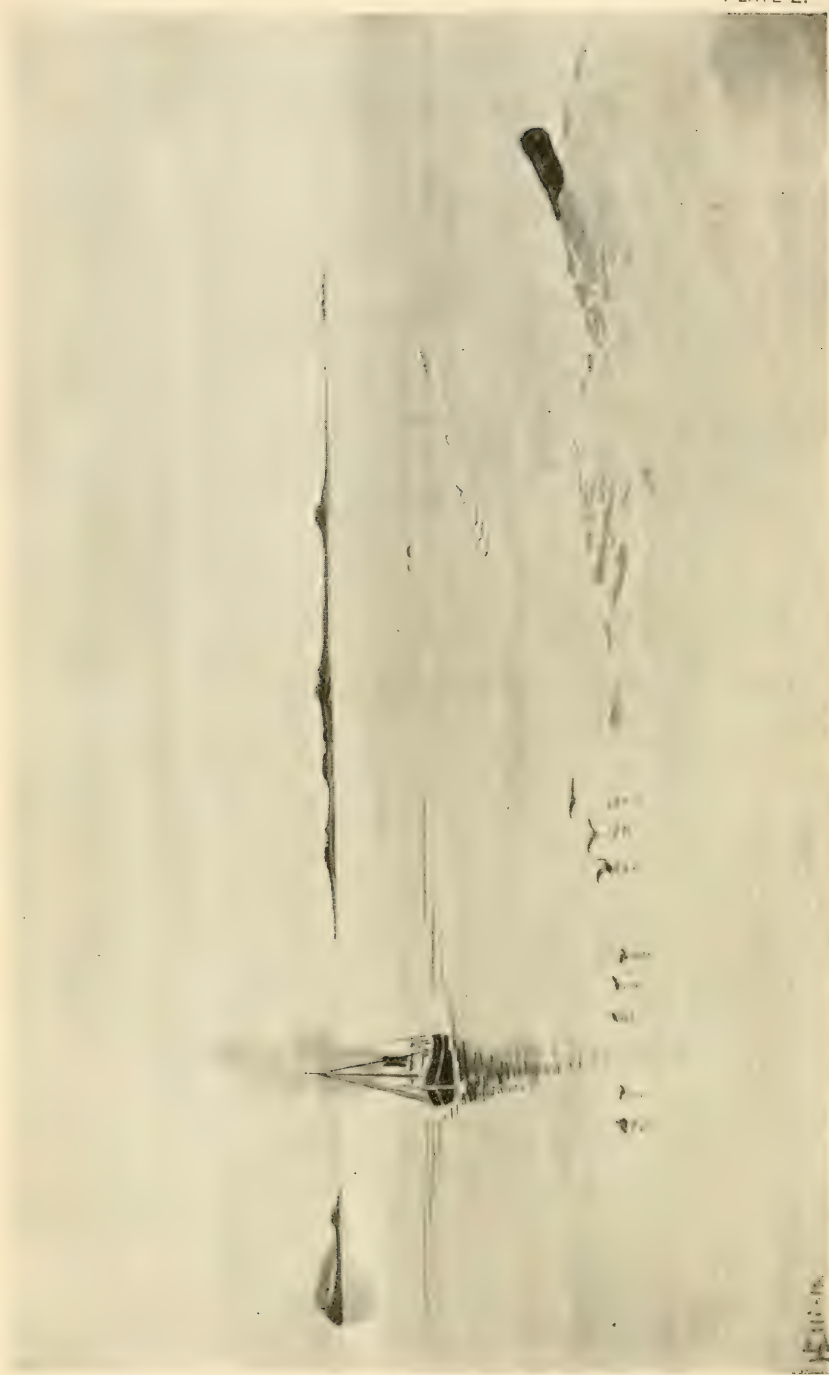
J. G. CARLISLE,
Secretary.

Hon. THOMAS B. REED,
Speaker of the House of Representatives.

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A drawing from nature by the author.

OTTER ISLAND.
(5½ miles distant.)

SOUTHWEST POINT.
(16 miles distant.)

BOGASLOV.
(600 feet.)

POLAVINA SOPKA.
(550 feet.)

NORTHEAST POINT.
(17 miles distant.)

VIEW OF SAINT PAUL ISLAND, PRIBILOF GROUP.

From the SE., August 11, 1890.

REPORT UPON THE PRESENT CONDITION OF THE FUR-SEAL ROOKERIES OF THE PRIBILOV ISLANDS OF ALASKA.

By HENRY W. ELLIOTT,
Special Agent, Treasury Department.

CLEVELAND, OHIO, *November 17, 1890.*

SIR: On the 7th of last April I received from your hands my appointment as the special agent under an act of Congress, approved April 5, 1890, which orders and provides for a thorough examination into the present status of the fur-seal industry of our Government as embodied on the seal islands of Alaska, so as to make known its relative condition now as compared with its prior form and well being in 1872, and for other kindred lines of inquiry.

I may as well frankly confess at the outset that I was wholly unaware of the extraordinary state of affairs which stared me in the face at the moment of my first landing last spring on the seal islands of Alaska. I embarked upon this mission with only a faint apprehension of viewing anything more than a decided diminution of the Pribilov rookeries, caused by pelagic sealing during the last five or six years.

But, from the moment of my landing at St. Paul Island, on the 21st of last May, until the close of the breeding season, those famous rookeries and hauling grounds of the fur seal thereon, and of St. George Island, too, began to declare and have declared to my astonished senses the fact that their utter ruin and extermination is only a question of a few short years from date, unless prompt and thorough measures of relief and protection are at once ordered at sea and on land by the Treasury Department, and enforced by it.

Quickly realizing after my arrival upon these islands that a remarkable change for the worse had taken place since my finished work of 1874 was given to the public in that same year, and the year also of my last survey of those rookeries, I took the field at once, carrying hourly and daily with me a series of notebooks opened under the following heads:

I. The "rookeries," their area, position, and condition in 1872-1874, and 1890.

II. The "hauling grounds," their appearance in 1872-1874 and 1890.

III. The method of "driving," and taking fur seals in 1872-1874, and 1890.

IV. The selection of skins, grade, and supply in 1872-1874 and 1890.

V. Character, condition, and number of natives in 1872-1874 and 1890.

VI. Conduct of native labor and pay in 1872-1874 and 1890.

To these heads I add the following sections, the whole series making up my report in the order as they are here given:

VII. The protection and preservation of these fur-bearing interests

of our Government on the Pribilof Islands, and that immediate action necessary, viewed in the full light of existing danger.

VIII. Appendix, in which the author's daily field notes appear *verbatim et literatim*, in order of day and date.

IX. Revised general maps of St. Paul and St. George, showing the area and position of the hauling grounds of the fur seal thereon in 1872-1874 and again in 1890.

X. A series of special maps showing the exact topography, area, and position of the breeding rookeries of St. Paul and St. George islands in 1872-1874 and again in 1890, together with an illustration of each rookery, drawn from life by the author.

Although I was unable to detect any sign of existing danger or injury to those interests of our Government on these islands of Pribilof in 1872-1874, yet the need of caution on the part of the agents of the Government, and their close annual scrutiny, was pointed out and urged by my published work of 1874¹ in the following language (pp. 75-77):

Until my arrival on the seal islands, April, 1872, no steps had been taken toward ascertaining the extent or the importance of these interests of the Government by either the Treasury agent in charge, or the agent of the company leasing the islands. This was a matter of no especial concern to the latter, but was of the first importance to the Government. It had, however, failed to obtain definite knowledge upon the subject, on account of the inaccurate mode of ascertaining the number of seals which had been adopted by its agent, who relied upon an assumption of the area of the breeding rookeries, but who never took the trouble to ascertain the area and position of these great seal grounds intrusted to his care.

After a careful study of the subject during two whole seasons, and a thorough review of it during this season of 1874, in company with my associate, Lieutenant Maynard, I propose to show plainly and in sequence the steps which have led me to a solution of the question as to the number of fur seals on the Pribilof Islands, together with that determination of means by which an agent of the Government will be able to correctly report upon the condition of the seal life from year to year.

At the close of my investigation for the season of 1872, the fact became evident that the breeding seals obeyed implicitly a fine, instinctive law of distribution: so that the breeding ground occupied by them was always covered by seals in an exact ratio, greater or less as the area was held; that they always covered the ground evenly, never crowding in at one place and scattering out at another; that the seals lay just as thickly together where the rookery is a small one of only a few thousand, as at Nalispel, near the village, as they do where a million of them come together, as at Northeast Point.

This fact being determined, *it is at once plain that just as the breeding grounds of the fur seal on these islands expand or contract in area from their present dimensions, so the seals will have increased or diminished.*

Impressed, therefore, with the necessity and the importance of obtaining the exact area and position of these breeding grounds, I surveyed them in 1872-73 for that purpose, and resurveyed them this season of 1874. The result has been carefully drawn and plotted out, as presented in the accompanying maps.

The time for taking the boundaries of the rookeries is during the week of their greatest expansion, or when they are as full as they are to be for the season, and before the regular system of compact, even organization breaks up: the seals then scattering out in pods or clusters, straying far back, the same number covering then twice as much ground in places as they did before when marshaled on the rookery ground proper. The breeding seals remain on the rookery perfectly quiet and *en masse* for a week or ten days during the period of greatest expansion, which is between the 10th and 20th of July, giving ample time for the agent to correctly note the exact boundaries of that area covered by them. This step on the part of the Government officer puts him in possession every year of exact data upon which to base a report as to the condition of the seal life as compared with the year or years previous. In this way my record of the precise area and position of the fur-seal breeding grounds on St. Paul Island in the season of 1872, and that of St. George in the season of 1873, correctly serves as a definite basis for all time to come, upon which

¹A Report upon the Condition of Affairs in the Territory of Alaska, by Henry W. Elliott, special agent Treasury Department. Washington: Government Printing Office, 1875. pp. 277, 8vo.

A drawing from nature by the author.
WATERFALL HEAD.
(7 miles distant.) GARDEN COVE.
(5 miles distant.)

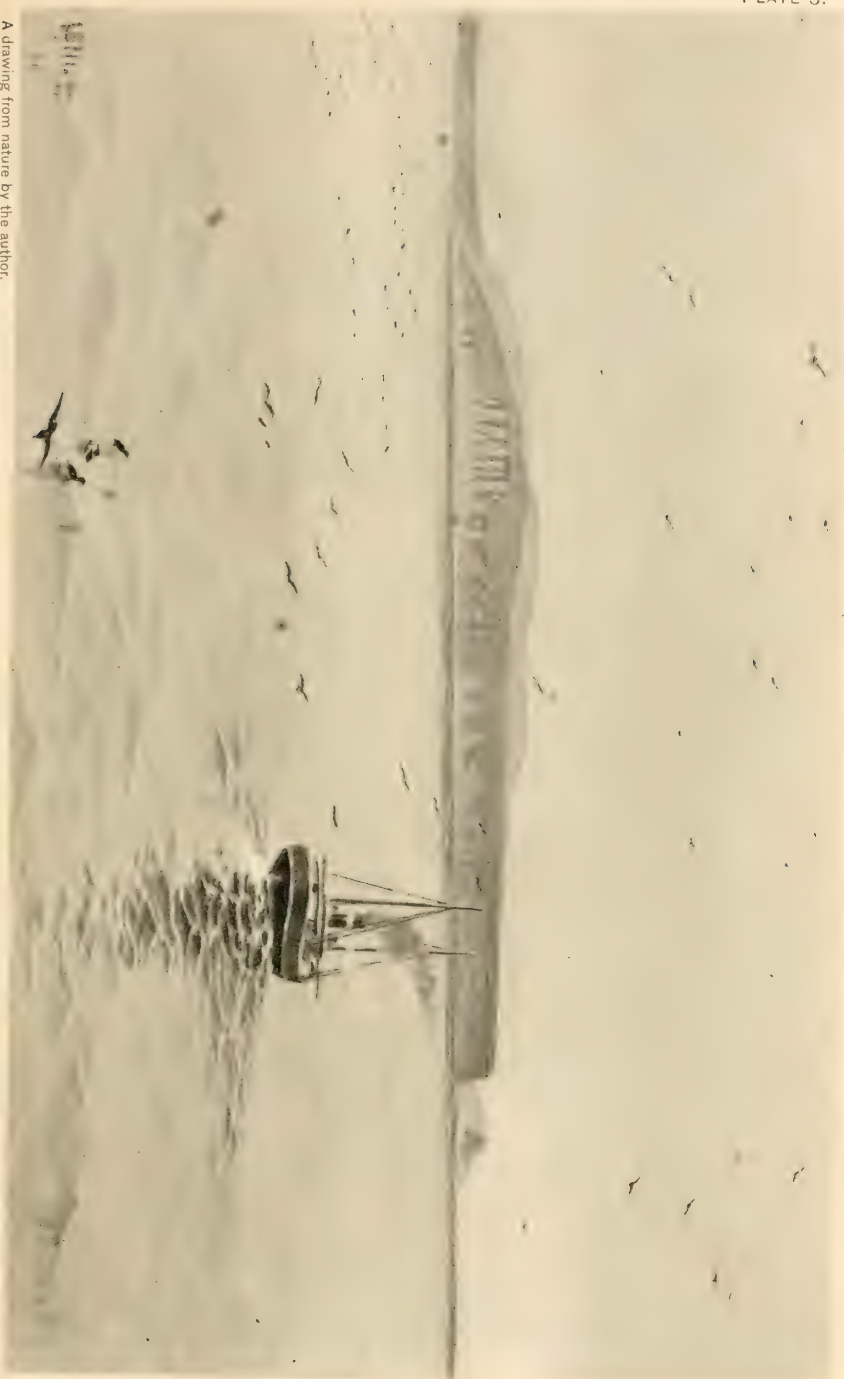
SEA LION BLUFFS.

VIEW OF THE EAST SHORE OF SAINT GEORGE ISLAND, PRIIBILOV GROUP.

TOLSTOI MEES.
(5 miles distant.)

DALNOI MEES.
(15 miles distant.)

Looking WSW., August 11, 1890.



to found authoritative reports from year to year as to any change, increase, or diminution of the seal life. It is therefore very important that the Government should have an agent in charge of these novel and valuable interests who is capable, by virtue of education and energy, to correctly observe and report the area and position of the rookeries year by year.

Therefore, in the light of the foregoing, you will observe that although I was unable to detect, myself, any danger to or diminution of the seal life on the Pribilof Islands after three seasons of close study in the field, ending with the season of 1874, yet I was deeply impressed with the need of an intelligent, careful search every year for the signs of, or real existence of such danger; and I urged the Department to select men who were fit to make such a search: men who could be trusted to do it honestly and thoroughly. I made this request on the 16th of November, 1874, as I gave in my detailed report above cited, to the Secretary of the Treasury, who ordered it published at once and caused it to be widely circulated by the Department.

In 1872-1874 I observed that all the young male seals needed for the annual quota of 75,000, or 90,000, as it was ordered in the latter year, were easily obtained every season between the 1st of June and the 20th of July following, from the hauling grounds of Tolstoi, Lukannon, and Zoltoi Sands—from these hauling grounds adjacent to the rookeries or breeding grounds of Tolstoi, Lukannon, Reef, and Garbotch—all of these points of supply being not more than $1\frac{1}{2}$ miles distant from the St. Paul village killing grounds: the Zoltoi drive being less than 600 feet away.

At Northeast Point on this island Webster got all the seals desired toward filling the above-cited quota of 90,000 from that sand reach between the foot of Cross Hill and the Big Lake sand dunes on the north shore beach.

• Then that immense spread of hauling ground covered by swarms of young male seals at Zapadnié, at Southwest Point, at English Bay, beyond Middle Hill, west, at Polavina, and over all that 8 long miles of beach and upland hauling ground between Lukannon Bay and Webster's house at Novostoshnah—all of this extensive sealing area was not visited by sealing gangs or spoken of by them as necessary to be driven from. In this connection it is proper to say that the name of Middle Hill was not known or given to that or any other particular point in English Bay or elsewhere when I surveyed the island in 1872-1874: it was not so named until a few years afterwards: and was never known as a sealing drivers' title until then.

Therefore, when attentively studying in 1872-1874 the subject of what was the effect of killing annually 100,000 young male seals on these islands (90,000 on St. Paul and 10,000 on St. George), in view of the foregoing statement of fact, I was unable to see how any harm was being done to the regular supply of fresh blood for the breeding rookeries: since those large reservoirs of surplus male life above named, held at least just half of the young male seal life then belonging to the islands. These large sources of supply were never driven from: never even visited by the sealers: and out of their overwhelming abundance I thought that surely enough fresh male seal life must and did annually mature for service on the breeding rookeries.

Thereupon, when recapitulating in my published work of 1872-1874, I was positive in declaring that although I was firmly convinced that no increase to the then existing number of seals on these islands would follow any effort that we might make (giving my reasons in detail for so believing), yet I was as firmly satisfied that as matters were then conducted nothing was being done which would injure the regular annual

supply of male life necessary for the full demand of the rookeries. I then declared "that provided matters are conducted on the seal islands in the future as they are to-day, 100,000 male seals, under the age of 5 years and over 1, may be safely taken every year from the Pribilof Islands without the slightest injury to the regular birth rates or natural increase thereon: provided, also, that the fur seals are not visited by any plague, or pests, or any abnormal cause for their destruction which might be beyond the control of men."¹

I repeatedly called attention to this fact in my published report that all of the killable seals required were easily taken in thirty working days between June 14 and July 20 of every year, from those points above specified: and that those reservoirs of surplus male life at Southwest Point, Zapadnië, English Bay, Polayina, Tonkie Mees,² etc., were full and overflowing; that more than enough was untouched which sufficed to meet the demands of nature on the breeding grounds. But, to make certain that my theory was a good one and would be confirmed by time, *for I qualified my statement at that time as a theory only*, I made a careful and elaborate triangulation of the area and position of the breeding grounds in 1872-73 on St. Paul and St. George islands, aided and elaborated by my associate in 1874, Lieut. Washburn Maynard, U. S. N. This I did in order that any increase or diminution following our work could be authoritatively stated; *that a foundation of fact and not assumption should exist for such a comparison of the past order with that of the present or the future.*

Sixteen years have elapsed since that work was finished; its accuracy as to the statements of fact then published, was at that time unquestioned on these islands, and it is to-day freely acknowledged there. But what has been the logic of events? Why is it that we find now only a scant tenth of the number of young male seals which I saw there in 1872? When did this work of decrease and destruction so marked on the breeding grounds there begin, and how? This answer follows:

First. From overdriving, without heeding its warning: first begun in 1879: dropped then until 1882: then suddenly renewed again with increased energy from year to year, until the end is abruptly reached this season of 1890.

Second. From the shooting of fur seals (chiefly females) in the open waters of the North Pacific Ocean and Bering Sea: begun as a business in 1886 and continued to date.

Thus, the seal-life candle has been literally "burning at both ends" during the last five years!

That day in 1879, when it became necessary to send a sealing gang from St. Paul village over to Zapadnië to regularly drive from that hitherto untouched reserve, was the day that danger first appeared in tangible form since 1870—since 1857, for that matter.

The fact, then, that that abundant source of supply which had served so well and steadily since 1870-1881, should fail to yield its accustomed returns to the drivers, ought to have aroused some comment, ought then to have been recorded by the officer in charge in behalf of the Government at the close of the season's work in 1882; but it did not. Possibly the gravity of the change was not then fully appreciated by the sealers themselves, either through ignorance or inattention.

But, when in 1882, it became absolutely necessary to draw from that time on, until the end of the present season, heavily and repeatedly,

¹ Monograph of the Seal Islands of Alaska, p. 62.

² "Tonkie Mees," or Thin Point: named "Stony Point" by the white sealers in 1879, when they first began their killing on that ground; erected a salt house, etc.



A drawing from nature by the author.

Tolstoi.

LOWER ZAPADNE.

UPPER ZAPADNE.

MIDDLE HILL.

HOLLUSCHICKIE HAULING ON THE SANDS OF ENGLISH BAY, JULY 18, 1872. NATIVES "CUTTING OUT A DRIVE."

View looking west from Tolstoi Sand Dunes, over the bay to Zapadne and Southwest Point, Saint Paul Island.

upon these hitherto untouched sources of supply for the rookeries, in order to get the customary annual quota—at that time that fact, that glaring change from the prosperous and healthy precedent and record of 1870-1881, should have been—it was—ample warning of danger ahead. It seems, however, to have been entirely ignored, to have fallen upon inattentive or incapable minds; for, not until the report for 1889 from the agent of the Government in charge, who went up in the spring of that year for his first season of service and experience—not until his report came down to the Treasury Department, had there been the slightest intimation in the annual declarations of the officers of the Government of the least diminution or decrease of seal life on these islands since my work of 1874 was finished and given to the world!

On the contrary, strange as it may seem, all the Treasury agents since 1879 have, whenever they have spoken at all, each vied with the other in their laudations of the “splendid condition of the rookeries,” “fully up to their best standard,” etc., and one report in 1887 declares a vast increase over the large figures which I published in 1872-1874! which is again reiterated by the same officer in 1888.

But, how could these gentlemen reconcile their statements with that remarkable evidence of the decrease in supply of young males from the records made and before them—staring them in the face—of 1872-1874? When they saw and daily recorded the fact that sealing gangs were being daily sent out from the village, miles and miles away to hitherto undisturbed fields, for killable seals—the regular, customary hauling grounds then at the point of exhaustion from which an abundant supply had been easily secured during the last thirty years, and grass growing all over the hauling grounds of 1872—how, indeed, did that fact escape their attention? It did, however; it was utterly ignored.

I can see now, in the light of the record of the work of sixteen consecutive years of sealing, very clearly one or two points which were wholly invisible to my sight in 1872-1874. I can now see what that effect of driving overland is upon the physical well being of a normal fur seal: and, from that sight feel warranted in taking the following ground:

The least reflection will declare to an observer that while a fur seal moves easier on land and freer than any or all other seals, yet, at the same time, it is an unusual and laborious effort, even when it is voluntary; therefore, when thousands of young male seals are suddenly aroused to their utmost power of land locomotion over rough, sharp rocks, rolling clinker stones, deep, loose sand, mossy tussocks, and other equally severe impedimenta, they, in their fright, exert themselves violently, crowd in confused sweltering heaps, one upon the other, so that many are often smothered to death; and, in this manner of most extraordinary effort, to be urged along over stretches of unbroken miles, they are obliged to use muscles and nerves that nature never intended them to use, and which are not fitted for the action.

This prolonged, sudden, and unusual effort, unnatural and violent strain, must leave a lasting mark upon the physical condition of every seal thus driven and then suffered to escape from the clubbed pods or the killing grounds. They are alternately heated to the point of suffocation, gasping, panting, allowed to cool down at intervals, then abruptly started upon the road for a fresh renewal of this heating as they lunge, shamble, and creep along. When they arrive on the killing grounds, after four or five hours of this distressing effort on their part, they are then suddenly cooled off for the last time prior to the final

ordeal of clubbing. Then, when driven up into the last surround or "pod," the seals which are spared by cause of being unfit to take—as too big or too little, bitten, etc.—are permitted to go off from the killing ground back to the sea, outwardly unhurt, most of them; but I am now satisfied that they sustain, *in a vast majority of cases, internal injuries of greater or less degree,*¹ that remain to work physical disability or death thereafter to nearly every seal thus released, and certain injury to its virility and courage so necessary for its station on the rookery, even if it does live to successfully run this gauntlet of driving throughout every sealing season for five or six consecutive years, driven over and over again, as it is, during each one of these sealing seasons.

Therefore it now appears plain to me that those young male fur seals which may happen to survive this terrible strain of four or five successive years of driving overland, are rendered by this act of driving, wholly worthless for breeding purposes; that they never go to the breeding grounds and take up stations there, being utterly demoralized in spirit if not in body.

With this knowledge, then the full effect of "driving" becomes apparent, and that result of slowly but surely robbing the rookeries of a full and sustained supply of fresh nervy young male blood, demanded by nature imperatively for their support up to the standard of full expansion (such as I recorded in 1872-1874)—that result began, it now seems clear, to set in from the very beginning, twenty years ago, under the present system.

Had, however, a check been as slowly and steadily applied to that "driving" as it progressed in 1879-1882 upon those great reserves of Zapadni, Southwest Point, and Polavina, then the present condition of exhaustion, complete exhaustion, of the surplus supply of young male seals as compared with the number of females to-day, would not be observed—it would not have happened.

But, however, no attention was given whatever to the fact that in 1882 the reserves were suddenly, very suddenly, drawn upon, steadily and heavily for the first time, in order that a prompt filling of the regular annual quota should be made before or by the usual time of closing the sealing season for the year, viz, July 20; and, until the report

¹ I have been repeatedly astonished at the amazing power possessed by the fur seal of resistance to shocks which would certainly kill any other animal. To explain clearly, you will observe, by reference to my maps, that there are a great many cliffy places between the rookeries on the shore lines of the islands. Some of these cliffs are more than 100 feet in abrupt elevation above the surf and rocks awash below. Frequently "holluschickie," in ones or twos or threes, will stray far away back from the great masses of their kind, and fall asleep in the thick grass and herbage which covers these mural reaches. Sometimes they will lie down and rest very close to the edge, and then as you come tramping along you discover and startle them and yourself alike. They, blinded by their first transport of alarm, leap promptly over the brink, snorting, coughing, and spitting as they go. Curiously peering after them and looking down upon the rocks, 50 to 100 feet below, instead of seeing their stunned and motionless bodies, you will invariably catch sight of them rapidly scrambling into the water: and, when in it, swimming off like arrows from the bow. Three "holluschickie" were thus inadvertently surprised by me on the edge of the west face to Otter Island. They plunged over from an elevation there not less than 200 feet in sheer height, and I distinctly saw them fall, in scrambling, whirling evolutions, down, thumping upon the rocky shingle beneath, from which they bounded as they struck like so many rubber balls. Two of them never moved after the rebound ceased, but the third one reached the water and swam away like a bird on the wing.

While they seem to escape without bodily injury incident to such hard falls as ensue from dropping 50 or 60 feet upon pebbly beaches and rough boulders below, and even greater elevations, yet I am inclined to think that some internal injuries are necessarily sustained in most every case, which soon develop and cause death. The excitement and the vitality of the seal at the moment of the terrific shock is able to sustain and conceal the real injury for the time being.



A drawing from nature by the author.

TOLSTOI ROOKERY.

ZAPADNE POINT AND ROOKERIES.

(In middle distance.)

MIDDLE HILL.

VIEW OVER THE DESOLATE HAULING GROUNDS OF ENGLISH BAY, SAINT PAUL ISLAND, JULY 18, 1890.

Looking west from Tolstoi Sand Dunes. Contrast this view with the preceding picture made by the author from this same foreground, eighteen years ago.

for 1889, above cited, of the Treasury agent in charge, came into the Treasury Department, not a suggestion ever had been made in official writing, from 1872-1874, down to that time, of the slightest prospect even, of the amazing diminution of seal life which is now so painfully apparent.

Naturally enough, being so long away from the field, on reading Mr. Charles J. Goff's report for the season's work of 1889, I at once jumped to the conclusion that the pelagic sealing, the poaching of 1886-1889, was the sole cause for that shrinkage which he declared manifest on those rookeries and hauling grounds of the Pribilof Islands—such a great shrinkage as to warrant him in the declaration which he makes in that report that he believes that not over 60,000 young male seals can be secured here in 1890, and if more can be, that they should not be taken.

Still, charging it in this manner all to the pelagic killing was not quite satisfactory to my mind. I could figure out from the known number of skins which these hunters had placed on the market, a statement of the loss and damage to the rookeries, to the females and young, born and unborn: for that is the class from which the pelagic hunter secures at least 85 per cent of his catch: I was prepared to find by these figures that the breeding grounds had lost heavily; but that did not even satisfy me as to his statement, which came so suddenly in 1889, that little more than half of the established annual quota of 100,000 holluschickie suitable for killing could or should be secured here in 1890; for, great as my estimated shrinkage on the breeding grounds was due to the pelagic work, yet that would not, could not, explain to my mind the ninefold greater shrinkage of that supply from the hauling grounds which must exist, or else 60,000 young males might be easily taken, judging from my notes of such work in 1872. Therefore, I landed here very much confused in thought as to what I should observe.

I began at once, and finished by the 9th of June, an entire new topographical survey and triangulation of the landed area of the seven rookeries of St. Paul Island: and those of St. George Island on the 19th and 20th of July: so as to have these charts ready for instant use when the time came in which to observe the full form and number of the breeding seals as they laid upon this ground, viz, July 10-20 inclusive; thereafter, until the closing of the season on St. Paul, July 19, and on St. George up to August 4, I have daily recorded the full details of the hauling, the driving, and killing of seals there, the condition of the breeding animals, their arrival and behavior, etc. A thousand varied incidents have been faithfully observed, as my field notes will testify, and which appear with much detail in the following appendix to this report.

The present condition of these fur-seal preserves is nothing new to the history of their case while in the hands of the Russians. Twice before in the comparatively short period of a century, when they were first opened to the cupidity of man, have they been threatened with the same ruin that threatens them to-day. In 1806 and 1807 all killing was stopped to save them, but resumed again in 1808; too soon; for, after seventeen years of halfway measures, the full and necessary term of rest was given to them in 1834. The story of this "zapooska" of the Russians in 1834, and the causes which led them to threaten the extermination of those fur-seal interests on the Pribilof Islands, is one that is now timely in its repetition and should be heeded.

When these islands were first discovered in 1786-87, an indiscriminate

rush was made to them by the representatives of every Russian trading organization then in Alaska: by every one then able to fit out a vessel and hire a number of men. These eager, greedy parties located on and near all of the large rookeries and hauling grounds, and killed as many as they could handle. In those days all the skins were air-dried, and not salted, and that made the work of sealing then far slower and much more difficult than it is now, since the present system of salting skins practically offers no delay whatever to the work of killing and skinning. In my mind there is no doubt but what this inability to cure rapidly the skins for shipment in 1786-1805, as fast as they could then be killed and skinned—not one-tenth as fast as they can be to-day—that this delay alone saved the Pribilof rookeries from utter extermination in those early days. Certainly it was and must have been the cause: for, at least thirteen different trading organizations had their vessels and their men around and on these two islands of St. Paul and St. George, engaged to their utmost ability throughout full seventeen years of unbroken succession in taking fur-seal skins.

Had those early Russian fur hunters then possessed the knowledge and means of curing skins in salt that we now have, together with these appliances in use to-day on the seal islands of Alaska, I am well satisfied in my own mind that they would have killed every fur seal that remained to show itself in less than three years after they began operations: that they would have swept every animal from these grounds long, long before the old Russian American Company assumed autocratic control of these interests in 1799, and extended it in 1805 over all Alaska as well.

But, fortunately for us and the world as well, they did not know anything about curing skins in salt: they had but one method, and that was to stretch out the green skins and air-dry them upon frames in long, low drying houses: or in bright weather, during August, September, and October, to peg them out upon the ground, or stretch them on hoops and frames.

Thus this tedious process, in a climate as damp, foggy, and stormy as is that peculiar to the seal islands of Alaska, made these Slavonian sealers spend ten times as much time in the act of curing their fur-seal pelts as it took them to drive out and kill. Then, too, in those early days they were remote from a market: had no prompt, economical means of transportation to London; and, depended wholly upon the idiosyncrasies of the Chinese trade, via Kiachta: but even with this extraordinary hindrance, it seems that they took in that laborious and risky manner at least 100,000 fur-seal skins every year.¹

They took so many that by 1803, several hundred thousand of these air-dried pelts had accumulated over the ability of the old Russian company to profitably sell and dispose of, in time to prevent their decay—molding and damp, then abruptly decaying—rotting in large piles as they were stacked up in the warehouses at Kodiak: so “it became necessary to cut or throw into the sea 700,000 pelts” during that year. Naturally this loss of labor, time, and money cooled the ardor of the sealing gangs which were working the Pribilof Islands; they worked slower, when they did work, and most likely never worked at all in

¹ In the first years on St. Paul Island from 50,000 to 60,000 were taken annually and on St. George from 40,000 to 50,000 every year. Such horrible killing was neither necessary nor demanded. The skins were frequently taken without any list or count. In 1803, 800,000 seal skins had accumulated, and it was impossible to make advantageous sale of so many skins; for in this great number so many were spoiled that it became necessary to cut or throw into the sea 700,000 pelts. (Bishop Veniaminov, “Zapieskie,” etc., 1848, vol. 1, chap. 12.)

wet weather. Obligated to bow to the caprices of the climate or lose their labor, they were compelled to spare the seals, and this enforced delay in 1788-1806 has saved the Pribilof rookeries from that swift destruction which the keen, quick-witted American and English sealers inflicted during 1806-1826, upon the great breeding grounds of the fur seal in the Antarctic. They, our countrymen, then used the kench and salt; they were never bothered with the question of how to dispose of their skins after killing and skinning so as to save them; and they brought their methods of 1806-1826, the same methods of to-day, up to these seal islands of Alaska for the first time in 1868.¹

No one can state with more than mere estimation on his part the full number of seals slaughtered by the Russians on the Pribilof Islands from 1786 to 1817; no lists, no check whatever on it appears to have been made, and the record certainly never was made, since Bishop Veniaminov, who from 1825 up to 1838 was at the head of all matters connected with the church in this Oonalashka district, where the seal islands belonged: and who had the respect and confidence of the old Russian American Company, made a zealous search for such a record in 1834-35 among the archives of the company at Sitka, to which he had full access: but the result of his painstaking search he sums up in the following terse statement: "Of the number of skins taken up to 1817 I have no knowledge to rely upon, but from that time up to the present writing I have true and reliable accounts," which he puts into the appendix of his published work.²

The bishop (who is the only Russian who has given us the faintest idea of how matters were conducted in his time upon these islands) seems to have witnessed them in a uniform condition of decline as to yield; for, in the time of his writing and up to its closing in 1837, the record was one of steady diminution. Until 1834 the killing seems to have been permitted, with all sorts of half measures since 1817, adopted one after the other, to no good result whatever. Finally, however, the supply abruptly fell from an expected 20,000 to only 12,000 from both islands in 1834, "all that could be got with all possible exertion."

Then the Russians awoke to the fact that if they wished to preserve these fur-bearing interests on the Pribilof Islands from ruin they must stop killing: wholly stop for a number of years: stop until the renewal of the exhausted rookeries was manifest and easily recognized. This zapooska of 1835, which they then ordered, is the date of the renewed lease of life which these rookeries took: and, which by 1857, had restored them to the splendid condition in which they were when they passed into the hands of the United States: and which, now, after twenty-two years of killing since 1868, and under the recent regulations of 1870, together with the pelagic sealing since 1886, we find again threatened with speedy extinction unless full measures are at once adopted for their preservation and restoration on land and in the sea. Half meas-

¹They began at once that system of disciplined, exhaustive slaughter which had proved so effective in their hands throughout the Antarctic—took nearly 250,000 seal skins on these islands in the short space of four months; ceased then only for the want of salt. But, happily, the Government intervened early in 1869, before they could resume their work of swift destruction. In 1851 the first salting of fur-seal skins was attempted on the Pribilof Islands, but the rudeness of the method caused trouble when the shipment reached London. In 1862 it was tried again by the Russians, but it was still crudely done until our people went to work in 1868 with their thorough methods. The Russians seldom bundled their skins when salted; they allowed them to dry while kenching in salt; and then shipped them just as they did their air-dried skins or "parchment" pelts.

²"Zapieskie ob Onalashenskaho Otdayla," St. Petersburg, 1842, 2 vols. 8. A full translation of that chapter which treats of that question will follow this introduction.

ures will not do: they failed in the Russian period signally; they will as signally fail with us if we yield in the slightest degree to any argument for their adoption.

It is interesting, therefore, to study the figures which Veniaminov gives us of the yield from these islands during that period extending down from 1817 to 1837. Study it in connection with his statement of what those attempts were, and which were being made—futile efforts by the old company to build up the business and yet continue sealing: until finally, after seventeen years of continual diminution and repeated introduction of half-way methods of restoration, the end came abruptly; and, what ought to have been done at first, was finally forced in 1834. The absolute rest of the rookeries in 1835 came and practically continued until 1846-1850; then a gradual rise above 10,000 "holluschickie," or young male fur seals, per annum, began to be safely taken; and by 1854 the exhausted and nearly ruined rookeries of St. Paul and St. George were able to yield 35,000 prime fur-seal pelts without the slightest injury to them; and, by 1857-1860 the seals were so numerous that the Russians ceased to regard them as objects of care, and thereafter governed their annual catch by the demands outside alone, taking as the market called for them anywhere from 40,000 to 80,000 annually.

As matters stand to-day on the seal islands, the situation is very much the same as it was in 1834. Then it was expected that 20,000 seals would be taken; but, only 12,000 were secured "with all possible exertion." This year it was expected that 60,000 fine skins would be taken; but, only 21,000 have been secured with all possible exertion, nearly half of this catch being small, or $5\frac{1}{2}$ to $6\frac{1}{2}$ pound skins, raking and scraping the rookery margins without a day's intermission from the opening to the closing of the season. Of this work of 1890, I give you in this report the fullest detail of its progression, day by day, to the merciful ending of it, ordered so happily by you.

It will be promptly observed from a study of this record of the Russians, which has been so plainly and honestly given to us by Veniaminov and Shaiesnickov, that the Russians during their control were faced at two periods with the prospect of a speedy extermination of these fur-seal rookeries of Alaska. In 1806 and 1807 they stopped all killing on these islands of St. Paul and St. George, but began to kill again in 1810; too soon. Veniaminov's record and account shows that from 1817, in spite of everything they could do, save stopping short of all killing, "only made matters worse."

Finally, in 1834, with the second and positive threat of swift extermination again facing them, the Russians reluctantly surrendered and ordered a rest, which lasted seven years ere any beginning was fairly made to kill more than a few thousand young male seals annually. In the first year only 100 of such animals were taken, the number being very slowly raised year after year until 1847-1850.

With reference to the preservation and conduct of this interesting and valuable industry, my study last summer of the subject has led me step by step to the following conclusions:

First. That we restrict and prohibit all killing of fur seals on the Pribilof Islands for tax and shipment of skins for the next seven years, without reflection on the present lessees: the Government to assume entire control, care, and supervision of the restoration of these interests during that period, since a division of responsibility will only provoke confusion and scandal, and probably result in defeating the object in view.

Second. This step on our part warrants us in asking the cooperation of Great Britain and Russia in establishing a close time for the protection of the fur seals of Bering Sea during their breeding season, and that final regulations be agreed upon by a joint commission, which shall consist of experts selected by the powers inter-

ested, and who shall visit the seal islands of Bering Sea next summer for that purpose. Pending the settlement of these regulations and the report of this commission, all pelagic sealing in Bering Sea to be declared illegal by the several powers interested.

In concluding this introduction to my work of the past season and its results, I desire to say that I have been exceedingly careful in gathering my data upon which I base all statement of fact and opinion, and to secure these data I have literally lived out upon the field itself, where those facts alone can be gathered honestly, or else, had better not be gathered at all.

I now submit, most respectfully, my detailed report covering the above-mentioned heads, together with those field sketches and maps which I deem necessary to give a more distinct, clear, and full idea of my meaning and understanding of the subjects treated. Trusting that it will meet with your approval,

I am, very respectfully, your obedient servant,

HENRY W. ELLIOTT.

Hon. WILLIAM WINDOM,
Secretary of the Treasury.

SECTION I.

THE ROOKERIES OR BREEDING GROUNDS OF THE FUR SEAL ON THE PRIBILOV ISLANDS OF ALASKA; THEIR AREA AND CONDITION IN 1872-1874 AND 1890.

GEOGRAPHICAL DISTRIBUTION OF THE FUR SEAL AND ITS EXTER- MINATION IN THE ANTARCTIC.

PECULIARITIES OF DISTRIBUTION.

Our first thought in studying the distribution of the fur seals throughout the high seas of the earth is one of wonder. While they have been so widely spread over the Antarctic regions, yet, as we pass the equator going north, we find in the Atlantic above the tropics nothing that resembles them. Their landed habitat in the North Pacific is virtually confined to four islands in Bering Sea—St. Paul and St. George—of the Pribilof group, and Bering and Copper of the Commander Islands.

It should be observed that there is abundant reason, owing to the constitution and the habit of *Callorhinus*, for this remarkable restriction in the Northern Hemisphere compared with its expansion to the south. It is, however, very singular, even in the light of all we know, that right on the equator itself, a trifle to the southward of it, viz, on the Galapagos Islands, fur seals are still found where they were first found a hundred years ago.

The remarkable discrepancy which we have alluded to, may be better understood when we consider that these animals require certain conditions of landing, breeding ground, and climate, all combined, for their perfect life and reproduction. In the North Atlantic no suitable ground for their reception exists or ever did exist; and really nothing in the North Pacific, beyond what we have designated in Bering Sea, will answer the requirements of the fur seal. When we look over the Antarctic waters we are surprised at what might have been done, and should have been done, in those southern waters. Hundreds of miles of the finest seal-breeding grounds on the western coast of Patagonia, the beautiful reaches of the Falkland Islands, the great extent of Desolation Island, together with the whole host of smaller islets, where these animals abounded in almost countless numbers when first discovered (and should abound to-day, millions upon millions of them), have been, through nearly a century, the scenes of indiscriminate slaughter, directed by most unscrupulous and most energetic men. It seems well-nigh incredible, but it is true, nevertheless, that for more than fifty years a large fleet, numbering more than sixty sail, and carrying thousands of active men, traversed this coast and circumnavigated every island and islet, annually slaughtering right and left wherever the seal life was found. Ships were laden to the water's edge with the fresh, air-dried, and salted skins, and they were swallowed up in the marts of the world, bringing mere nominal prices—the markets glutted, but the butchery never stopping.

I will pass in brief review the seal grounds of the Southern Hemisphere, taking at the outset those which are peculiar to the waters of the Pacific Ocean. The Galapagos Islands come first to our notice.

This scattered group of small rocks and islets, uninhabited and entirely arid, was fifty years ago resorted to by a very considerable number of these animals, *Arctocephalus australis*, together with many sea lions, *Otaria hookeri*. Great numbers were then taken by those sealers, who found to their sorrow, when the skins were inspected, that they were thinfurred and worthless. A few survivors, however, remain to this day.

Along and off the coast of Chile and Bolivia are the St. Felix, Juan Fernandez, and Masafuera islands, the latter place being one of the most celebrated rookeries known to southern sealers. The west coast of Patagonia and a portion of that of Terra del Fuego was in those early days of seal hunting, and is to-day, the finest connected range of seal-rookery ground in the south. Here was annually made the concentrated attack of that sealing fleet above referred to; and one can readily understand how thorough must have been its labor, as he studies the great extent and deep indentation of this coast, its thousand and one islands and islets, and when he knows to-day that there is scarcely a bunch of fur seals known to exist there. The Falkland Islands, just abreast of the Straits of Magellan, were also celebrated and a favorite resort, not only of the sealers, but for the whale fleets of the world. They are recorded, in the brief mention made by the best authority, as fairly swarming with fur seals when they were opened up by Captain Cook. There are to-day, in the place of the hundreds of thousands that once existed, an insignificant number, taken notice of only now and then.

The Georgia Islands and the Sandwich group, all a succession of rocky islands and reefs awash—the South Orkneys, the Shetlands, the Auckland group, Campbell Island, Emerald Island, and a few islets lying just to the southward of New Zealand—have all been places of lively and continued butchery, the fur seals ranging in desperation from one of those places to the other as the seasons progressed and the merciless search and slaughter continued. These pinnipeds, however, never went to the southward of 62 degrees south latitude.

In considering these regions of the Antarctic I must not forget also to mention that the fur seal was in early times up the east coast of South America, here and there, in little rookeries, as far north as Cape St. Roque; but the number was unimportant when brought into contrast with that belonging to those localities which we have designated. A small cliff-bound rookery to-day exists at Cape Corrientes. This is owned and farmed out by Argentina, and we are informed that in spite of all their care and attention they have neither increased nor have they diminished from their original insignificance. From these rookeries only 5,000 to 10,000 were and are annually taken. Another small preserve on the Lobos islets, near the mouth of the River Plate, is also protected and leased by the Government of Uruguay, and from 12,000 to 15,000 skins are annually taken there.

When we look at our northern Atlantic waters, we speedily recognize the fact that between North America and Europe, across the Atlantic and into the Arctic, there is not a single island, or islet, or stretch of coast on which the fur seal could successfully struggle for existence; therefore it has never been found there. It appears as if our fur seals had originally passed to Bering Sea from the parent stock of the Patagonia region, up along the coast of South America, a few tarrying at the dry and heated Galapagos Islands, the rest speeding on to the northward, disturbed by the clear skies and sandy beaches of the Mexican Coast, on and up to the great fish-spawning shores of the Aleutian Islands and Bering Sea. There, on the Pribilof group and the bluff Commander Islands, they found that union of cool water, well-adapted

landing, and moist, foggy air which they had missed since they left the storm-beaten coasts far below.

In the Antarctic waters of the Eastern Hemisphere seals were found at Tristan da Cunha, principally on Little Nightingale Island; the Crozets group, all small rocks, as it were, over which violent storms fairly swept; then we observe the great rookeries of Prince Edward's Group and Desolation Island—where perhaps nine-tenths of all the oriental fur seals congregated—thence over to a small and insignificant islet known as the Royal Company, south of Good Hope. This list includes all the known resting places of the fur seal in those waters.

In the North Pacific, during prehistoric times, a legend from Spanish authority states that fur seals were numerous or abundant on the Santa Barbara and Guadaloupe islands, off the coast of California and the peninsula to the southward. A few were annually taken from these islands up to 1835, and irregularly found there until 1874, an interregnum of some ten years: and, a few hundred skins were taken from there in 1885. None have been secured since. Also, fur seals were wont to sport and rest on those celebrated rocks off the harbor of San Francisco known as the Farralones; but, no tradition locates a seal rookery anywhere else on the northwest coast, or anywhere else in all Alaska and its islands, save the Pribilof group: while across and down the Asiatic coast, only the Commander Islands and a little rocky islet known as Robbens Reef (right under the lee of Sakhalen Island, Okotsk Sea) are known as the resort of this animal. The crafty savages of that entire region, the hairy Aino, and the Japanese themselves have searched in vain during the last hundred years for other ground frequented by these fur seals.

In the light of the foregoing remarks is it not natural, when we reflect upon the immense area and the exceedingly favored conditions of climate and ground frequented by the fur seals of the Southern Ocean, to say that their number must have been infinitely greater as they were first apprehended, surpassing all adequate description, when compared to those which we did regard as the marvel and wonder of our age—the breeding rookeries of the Pribilof group?

It is a great pity that this work of extermination in the Antarctic and senseless destruction should have progressed, as it has, to the very verge of total extinction, ere anyone was qualified to take note of and record the wonderful life thus eliminated. The Falkland Islands and the Shetlands at least might have been placed under the same restrictions and wholesome direction which the Russians established in the north seas, the benefits of which accrue to us until now, and will forever, if the evils now rampant are at once remedied. Certainly it is surprising that the business thought, the hardheaded sense, of those early English navigators should not have been equal to that of the Russian Promyshleniks, who were renowned as the most unscrupulous and the greediest of gain getters.

The Antarctic islands offered natural advantages of protection by land far superior to those found on the Pribilof or Commander groups. They had harbors and they laid outside of the track of commerce: advantages which are not all shared by our islands. At Desolation Island perhaps the difficulties were insuperable on account of the great extent of coast, which is practically inaccessible to man and nearly so to the seals; but the South Shetlands might have been farmed out by the British Government at a trifling outlay and with exceedingly good results, for millions upon millions of the fur seals could rest there to-day, as they did a hundred years ago, and be there to-morrow, as our seals do and are in Bering Sea. But the work is done. There is nothing

down there now valuable enough to rouse the interest of any government. Still, a beginning might be made which possibly fifteen or twenty years hence would rehabilitate the scourged and desolated breeding ground of the south seas. We are selfish people, however, and look only to the present, and it is without question more than likely that should any such proposition be brought before the British Parliament it would be so ridiculed and exaggerated by unthinking men as to cause its speedy suppression.

Now, we are brought in this season of 1890 face to face with the same danger on our own preserves which has destroyed these interests in the Antarctic. Shall we be equal to the occasion, or, shall it be said that they, too, have been ruined by human greed?

THE ROOKERIES OR BREEDING GROUNDS OF THE FUR SEAL ON THE PRIBILOV ISLANDS.

The breeding grounds or rookeries of the Pribilov Islands have altered very slightly insofar as their topographical features are concerned since the date of my last survey of them in 1874; but a marked change in the numbers of the fur seals that then repaired to these grounds, has taken place.

On St. Paul Island, in 1872, we saw the breeding herds of the fur seal in the following form and numbers, contrasted with the figures of to-day, which are made in precisely the same time and method as those of 1872-1874 were:

Analysis of the breeding grounds of the fur seal on St. Paul Island (Pribilov group).

AS SURVEYED, SEASONS OF 1872-1874.

Rookeries.	Sea margin.	Average depth solid massing.	Square feet.	Number of seals (bulls, cows, and pups).
	<i>Feet.</i>	<i>Feet.</i>		
July 10, 1872, July 15, 1874, Reef had.....	4, 016	150	602, 000	301, 000
July 10, 1872, July 15, 1874, Garbotch had.....	3, 660	100	366, 000	183, 000
July 10, 1872, July 16, 1874, Lagoon had.....	750	100	750, 000	37, 000
July 10, 1872, Nah Speel had.....	400	40	16, 000	8, 000
July 15, 1872, July 19, 1874, Lukannon had.....	2, 270	150	340, 000	170, 000
July 14, 1872, July 19, 1874, Ketavie had.....	2, 200	150	330, 000	165, 000
July 15, 1872, July 6, 1874, Tolstoi had.....	3, 000	150	450, 000	225, 000
July 16, 1872, July 16, 1874:				
Upper Zapadne had.....	2, 680	73½	195, 600	97, 800
Lower Zapadne had.....	3, 200	215½	690, 000	345, 000
July 17, 1872, July 18, 1874, Polavina, including Little Polavina, had.....	4, 000	150	600, 000	300, 000
July 18, 1872, July 18, 1874, Novastoshnah had.....	15, 840	150	2, 400, 000	1, 200, 000
Grand sum total, season of 1872.....				3, 030, 000

AS SURVEYED, SEASON OF 1890.

July 10, 1890, Reef has.....	4, 300	65½	281, 000	140, 500
July 10, 1890, Garbotch has.....	2, 400	70½	169, 604	84, 802
July 14, 1890, Lagoon has.....	1, 500	12	18, 000	9, 000
July 14, 1890, Nah Speel*.....				
July 11, 1890, Lukannon has.....	2, 050	60½	145, 000	72, 500
July 11, 1890, Ketavie has.....	1, 700	34	56, 000	28, 000
July 11, 1890, Tolstoi has.....	2, 800	44½	124, 800	62, 400
July 12, 1890:				
Upper Zapadne has.....	4, 500	15½	70, 000	35, 500
Lower Zapadne has.....	2, 700	63½	175, 410	85, 705
July 13, 1890, Polavina, including Little Polavina has.....	2, 255	121½	284, 500	142, 250
July 13, 1890, Novastoshnah has.....	11, 435	37½	435, 750	217, 875
Grand sum total, season of 1890.....				878, 532

* Has disappeared.

Season of 1872.....	3, 030, 000
Season of 1890.....	878, 532

Showing a loss since 1872 on the rookeries of St. Paul of.....2, 151, 468

Without explanation I may be considered as making use of paradoxical language by using these terms of description: for the inconsistency of talking of "pups" and "cows" and "bulls" and "rookeries," on the breeding grounds of the same, can not fail to be noticed; but this nomenclature has been given and used by the American and English whaling and sealing parties for many years, and the characteristic features of the seals themselves so suit the naming that I have felt satisfied to retain the style throughout as rendering my description more intelligible, especially so to those who are engaged in the business, or may be hereafter. The Russians are more consistent, but not so "pat." They call the "bull" "see-catch," a term implying strength, vigor, etc.; the cow, "matkah," or mother; the pups, "kotickie," or little seals; the nonbreeding males under 4 years, "holluschickie," or bachelors, and the young bulls between 4 and 6 years, "pol seacatchie," or "half bulls." The name applied collectively to the fur seal by them is "morskije-kot," or sea cat.

The rookeries of St. George Island have suffered also, but not to so great an extent: only half of their number of 1873-1874 is missing as we view them this summer. The following statement tells the story:

Analysis of the breeding grounds of the fur seal on St. George Island (Pribilof group).

AS SURVEYED, SEASONS OF 1872-1874.

Rookeries.	Sea margin.	Average depth solid massing.	Square feet.	Number of seals (bulls, cows, and pups).
	<i>Feet.</i>	<i>Feet.</i>		
July 12 1873, July 10, 1874, Zapadnie had	600	60	36,000	18,000
July 12 1873, July 10, 1874, Starry Arteel had	506	125	60,840	30,420
July 13, 1873, July 11, 1874, North had	750	150	112,500	76,250
	2,000	20	40,000	
July 13, 1873, July 11, 1874, Little East had	200	100	20,000	12,750
	550	10	5,500	
July 13, 1873, July 11, 1874, East had	200	200	40,000	25,250
	700	15	10,500	
Grand sum total of 1873				162,670

AS SURVEYED, SEASON OF 1890.

July 20, 1890, Zapadnie had	1,250	20	25,000	12,500
July 20, 1890, Starry Arteel had	800	40	32,000	16,000
July 19, 1890, North had	2,066	31	64,046	38,523
	1,300	10	13,000	
July 20, 1890, Little East had	800	12	9,600	4,800
	200	30	6,000	
July 20, 1890, East had	2,040	5	10,200	9,100
	1,000	12	2,000	
Grand sum total of 1890				80,923

¹ Allowed.

Season of 1873	162,670
Season of 1890	80,923

Showing a loss since 1873 of the rookeries of St. George of

81 747

In the light of the foregoing tables, it will be seen that during 1872-1874 the rookeries of St. Paul and St. George carried 3,192,670 breeding fur seals and their young; that sixteen years later only 959,455 breeding seals and their young can be honestly said to exist thereon.

Great as this loss is, yet it is faint in comparison with that sustained on the hauling grounds as we find matters to-day—there, not even hundreds can be seen now, where we saw thousands sixteen years ago! The young male seals have been directly between the drive, club, and

pelagic hunter since 1882, while the females have had but one direct attack outside of natural causes; they have been, however, the chief quarry of the pelagic sealer during the last five years. The slow elimination of that surplus young male life which was and is necessary for the continued support of these rookeries, and its abrupt curtailment entirely during the last two seasons, coupled with the deadly work of the open-sea hunter throughout the last five years, brings these renowned fields of fur-seal life into immediate danger of speedy extermination as matters are to-day. In order that the full gravity of this statement may be appreciated, I deem it proper that the several steps should be retaken which I took in 1872-1874 toward the determination of that number of seals I recorded then as existing on the Pribilof rookeries. I said then in my published monograph under this particular head:¹

AUTHOR'S PLAN OF COMPUTATION IN 1872-1874.

"Before I can intelligently and clearly present an accurate estimate of the aggregate number of fur seals which appear upon those great breeding grounds of the Pribilof group every season, I must take up in regular sequence my surveys of these remarkable rookeries which I have illustrated in this memoir by the accompanying sketch maps, showing topographically the superficial area and distribution assumed by the seal life at each locality.

"It will be observed that the sum total on St. Paul Island preponderates and completely overshadows that which is represented at St. George. Before passing to the detailed discussion of each rookery, it is well to call attention to a few salient features in regard to the present appearance of the seals on these breeding grounds, which latter are of their own selection. Touching the location of the fur seals to-day, as I have recorded and surveyed it, compared with their distribution in early times, I am sorry to say that *there is not a single line on a chart, or a word printed in a book, or a note made in manuscript, which refers to this all-important subject prior to my own work*, which I present herewith for the first time to the public. The absence of definite information in regard to what I conceive to be of vital interest and importance to the whole business astonished me; I could not at first believe it, and for the last four or five years I have been searching among the archives of the old Russian company, as I searched diligently when up there and elsewhere in the Territory of Alaska, for some evidence in contradiction of this statement which I have just made. I wanted to find—I hoped to discover—some old record, some clue, by which I could measure with authority and entire satisfaction to my own mind the relative volume of seal life in the past, as compared with that which I record in the present: but, was disappointed.

"I am unable, throughout the whole of the following discussion, to cite a single reliable statement which can give any idea as to the condition and numbers of the fur seal on these islands when they were discovered in 1786-87, or during the whole time of their occupation since, up to the date of my arrival. I mark this so conspicuously, for it is certainly a very strange oversight: a kind of neglect, which, in my opinion, has been, to say the least, inexcusable.

RUSSIAN RECORDS.

"In attempting to form an approximate conception of what the seals were or might have been in those early days, as they spread themselves

¹Pages 48-50, Monograph, Seal Islands (Census ed. 1881).

over the hauling and breeding grounds of these remarkable islands, I have been thrown entirely upon the vague statements given to me by the natives, and one or two of the first American sealers on the islands. The only Russian record which touches ever so lightly upon the subject¹ contains the remarkable statement, which is, in the light of my surveys, simply ridiculous now—that is, that the number of fur seals on St. George during the first years of Russian occupation was nearly as great as that on St. Paul. The most superficial examination of the physical character of the coasts portrayed on the accompanying maps of those islands, will satisfy any unprejudiced mind as to the total error of such a statement. Why, a mere tithe only of the multitudes which repair to St. Paul in perfect comfort over the 16 to 20 miles of splendid landing ground found thereon, could visit St. George, when all of the coast line fit for their reception at this island is a scant $2\frac{1}{2}$ miles; but for that matter, there was, at the time of my arrival and in the beginning of my investigation, a score of equally wild and incredible legends afloat in regard to the rookeries on St. Paul and St. George. Finding, therefore, that the whole work must be undertaken *de novo*, I set about it without further delay.

“Thus it will be seen that there is, frankly stated, nothing to guide us to a fair or even approximate estimate as to the number of the fur seals on these two islands prior to my labor.

MANNER OF COMPUTING THE NUMBER OF SEALS.

“After a careful study of the subject during three entire consecutive seasons, and a confirmatory review of it in 1876, I feel confident that the following figures and surveys will, upon their own face, speak authoritatively as to their truthful character.

“At the close of my investigation, during the first season of my labor on the grounds, in 1872, the fact became evident that the breeding seals obeyed implicitly an imperative and instinctive natural law of distribution—a law recognized by each and every fur seal upon the rookeries, prompted by a fine consciousness of necessity for its own well-being. The breeding grounds occupied by them were, therefore, invariably covered by the seals in exact ratio, greater or less, as the area upon which they rested was larger or smaller. They always covered the

¹Veniaminov: Zapiesskie ob Oonalashkenskaho Otdayla, 2 vols., St. Petersburg, 1842. This work of Bishop Innocent Veniaminov is the only one which the Russians can lay claim to as exhibiting anything like a history of western Alaska, or of giving a sketch of its inhabitants and resources that has the least merit of truth or the faintest stamp of reliability. Without it we should be simply in the dark as to much of what the Russians were about during the whole period of their occupation and possession of that country. He served, chiefly as a priest and missionary, for twenty-five years, from 1814 to 1839, at Unalaska, having the seal islands in his parish, and was made bishop of all Alaska. He was soon after recalled to Russia, where he became the primate of the national church, ranking second to no man in the Empire, save the Czar. He must have been a man of fine personal appearance, judging from the following description of him, noted by Sir George Simpson, who met him at Sitka in 1842, just as he was about to embark for Russia: “His appearance, to which I have already alluded, impresses a stranger with something of awe, while in further intercourse, the gentleness which characterizes his every word and deed insensibly molds reverence into love; and, at the same time, his talents and attainments are such as to be worthy of his exalted station. With all this, the bishop is sufficiently a man of the world to disdain anything like cant. His conversation, on the contrary, teems with amusement and instruction, and his company is much prized by all who have the honor of his acquaintance.” Such is the portrait drawn of him by a governor of the Hudson Bay Company. At the advanced age of 93 years this much beloved and esteemed prelate died, in Moscow, April 22, 1879.

ground evenly, never crowding in at one place here to scatter out there. The seals lie just as thickly together where the rookery is boundless in its eligible area to their rear and unoccupied by them, as they do in the little strips which are abruptly cut off and narrowed by rocky walls behind. For instance, on a narrow rod of ground under the face of bluffs which hem it back as land from the sea there are just as many seals, no more and no less, as will be found on any other rod of rookery ground throughout the whole list, great and small; *always exactly so many seals, under any and all circumstances, to a given area of breeding ground.* There are just as many cows, bulls, and pups on a square rod at Nah Speel, near the village, where, in 1874, all told, there were only 7,000 or 8,000, as there are on any square rod at Northeast Point, where a million of them congregate.

"This fact being determined, it is evident that just in proportion as the breeding grounds of the fur seal on these islands expand or contract in area from their present dimensions the seals will increase or diminish in number.

"My discovery, at the close of the season of 1872, of this law of distribution, gave me at once the clue I was searching for in order to take steps by which I could arrive at a sound conclusion as to the entire number of seals herding on the island.

"I noticed, and time has confirmed my observation, that the period for taking these boundaries of the rookeries so as to show this exact margin of expansion at the week of its greatest volume, or when they are as full as they are to be for the season, is between the 10th and 20th of July of every year—not a day earlier, and not many days later. After the 20th of July the regular system of compact, even organization breaks up. The seals then scatter out in pods or clusters, the pups leading the way, straying far back—the same number instantly covering twice and thrice as much ground as they did the day or week before, when they lay in solid masses and were marshaled on the rookery ground proper.

"There is no more difficulty in surveying these seal margins during this week or ten days in July than there is in drawing sights along and around the curbs of a stone fence surrounding a field. The breeding seals remain perfectly quiet under your eyes all over the rookery, and almost within your touch, everywhere on the outside of their territory that you may stand or walk. The margins of massed life, as I have indicated on the topographical surveys of these breeding grounds of St. Paul and St. George, are as clean cut and as well defined against the soil and vegetation as is the shading on my maps. There is not the least difficulty in making the surveys, and in making them correctly.

"Now, with a knowledge of the superficial area of these breeding grounds, the way is clearly open to a very interesting calculation as to the number of fur seals upon them. I am well aware of the fact when I enter upon this discussion that I can not claim perfect accuracy: but, as shadowing my plan of thought and method of computation, I propose to present every step in the processes which have guided me to the result.

ROOKERY SPACE OCCUPIED BY SINGLE SEALS.

"When the adult males and females, fifteen or twenty of the latter to every one of the former, have arrived upon the rookery, I think an area *a little less than 2 feet square* for each female may be considered as the superficial space required by each animal with regard to its size and in

obedience to its habits; and this limit may safely be said to be over the mark. Now, *every female or cow on this 2 feet square of space doubles herself* by bringing forth her young; and in a few days or a week perhaps, after its birth, the cow takes to the water to wash and feed, and is not back on this allotted space one-half of the time again during the season. *In this way, is it not clear that the females almost double their number on the rookery grounds without causing the expansion of the same beyond the limits that would be actually required did they not bear any young at all?* For every 100,000 breeding seals there will be found more than 85,000 females and less than 15,000 males; and in a few weeks after the landing of these females they will show for themselves—that is, for this 100,000—fully 180,000 males, females, and young instead, *on the same area of ground occupied previously to the birth of the pups.*

“It must be borne in mind that perhaps 10 or 12 per cent of the entire number of females were yearlings last season and come up on to these breeding grounds as nubile for the first time during this season—as two-year-old cows; they of course bear no young. The males, being treble and quadruple the physical bulk of the females, require about four feet square for their use of this same rookery ground: but, as they are less than one-fifteenth the number of the females, much less in fact, they therefore occupy only one-eighth of the space over the breeding ground, where we have located the supposed 100,000. This surplus area of the males is also more than balanced and equalized by the 15,000 or 20,000 two-year-old females which come on to this ground for the first time to meet the males. They come: rest a few days or a week and retire, leaving no young to show their presence on the ground.

“The breeding bulls average 10 feet apart by 7 feet on the rookery ground; have each a space therefore of about 70 square feet for an average family of 15 cows, 15 pups, and 5 virgin females, or 35 animals for the 70 feet—*2 square feet for each seal, big or little.* The virgin females do not lay out long and the cows come and go at intervals, never all being on this ground at one time, as the bull has plenty of room in his space of 70 square feet for himself and harem.

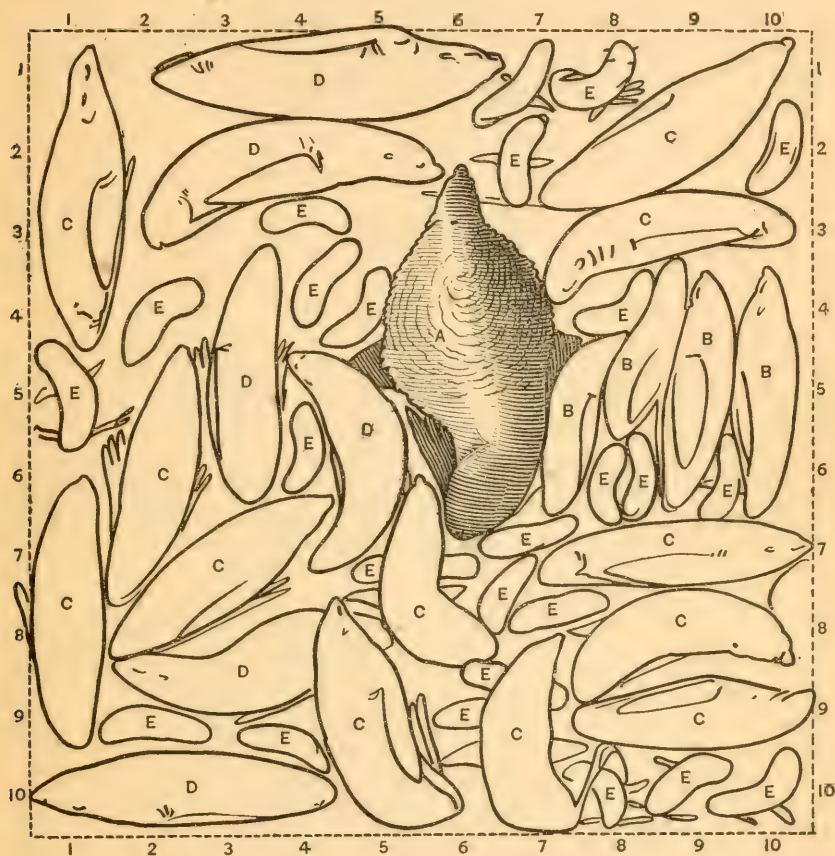
“Taking all these points into consideration, and they are features of fact, I quite safely calculate upon *an average of 2 square feet to every animal, big or little, on the breeding grounds* as the initial point upon which to base an intelligent computation of the entire number of seals before us. Without following this system of enumeration, a person may look over these swarming myriads between Southwest Point and Novastoshnah, guessing vaguely and wildly at any figure from 1,000,000 up to 10,000,000 or 12,000,000, as has been done repeatedly. How few people know what a million really is! it is very easy to talk of a million, but it is a tedious task to count it off, and makes one's statements as to ‘millions’ decidedly more conservative after the labor has been accomplished.”

[Transcript from the author's field notes of 1874.]

NAH SPEELKIE, *St. Paul Island, July 12.*

I am satisfied to-day that the pups are the sure guide to the whole number of seals on the rookeries. The mother seals are constantly coming and going, while the pups never leave the spot upon which they are dropped, more than a few feet in any direction until the rutting season ends; then they are allowed, with their mothers, by the old bulls to scatter over all the ground they want to. At this date the compact system of organization and massing on the breeding grounds is solidly maintained by the bulls; it is not relaxed in the least until on and after July 20.

This study of the breeding seals was made from the summit of a low bluff which rose perpendicularly back of and overhung these seals as depicted, and several thousand more on either side right and left, and beyond them down to the sea. The portions of the bodies of those seals which lay inside of the lines of this square, are not indicated; they belong to the adjoining harems.



ORIGINAL FIELD DIAGRAM.

Diagram of a section of "Nah Speel" breeding ground, showing the relative area and numbers of fur seals thereon as they appear massed uniformly all over the entire breeding area of the Pribilof Islands between July 10 and 20, at the height of the breeding or rutting season.

Scale one-half inch to the foot, showing exactly 100 square feet of superficial area, on which 18 breeding females (primipares, C, multipares, D); 4 virgin females (nubiles, B); 24 newly born pups (E), and 1 old bull or sea catch (A), laid under my eye July 12, 1874, showing the presence of 47 seals, big and little on this area, not at all uncomfortably crowded. The number of pups to the superficial area of the breeding ground, between July 10 and 20, is the surest guide to a correct calculation of the number of mothers, since it is seldom that more than one-half, generally only one-third, of the mothers are present at any one time. Six mothers are apparently absent in the above diagram; but they really never are all on this ground at any one time; more here to day than usual.

The following statements of fact as to this matter of the numbers of the breeding seals, as introductory, are pertinent:¹

First. No fur seals except the females (nubiles, primipares, and multipares) and their young, and the full-grown males, are found upon the breeding grounds during the rutting season; emphatically none at the height of this season in July every year.

Second. The proportion of females to males in 1872-1874 was an average of 15 bearing females, and their 15 young, newly born; and of nubiles or virgin females (or those coming into heat for the first time), an indefinite number, because they leave no evidence of their being on the ground by pupping. I believe that four or five of these young females to each male in 1872-1874 was a fair average.

If the reader will bear these two leading statements steadily in mind, as he follows my explanation below, he will not get my argument mixed up with the size and weight of the bachelor seals, or nonbreeding males that never came upon these rookeries in 1872-1874, during the breeding season aforesaid.

Now for the physical fur-seal data:

Typical examples of fur seals.	Average length.	Weight.
	Inches.*	Pounds.
A nubile female.....	45	58 to 60
An old female.....	48	75 to 100
A newly-born (two weeks old).....	14	10 to 11
Full grown bull or male.....	75	300 to 400

* From tip of nose to root of tail; tail very short, never more than 2 to 4 inches in length.

These figures are from a large series of measurements which I made on the killing grounds of the Pribilof Islands in 1872-1874, inclusive, and they can not be impeached.

Therefore, the reader will observe that a female seal is not quite 4 feet in length: her greatest diameter is at her shoulders (where her girth is from 28 to 32 inches), from 10 to 12 inches, the body then tapering rapidly from thence to both ends, anterior and posterior.

That a puppy seal from one to three weeks old (and when my estimates were made) is a scant foot in length, with its greater body diameter not more than 5 inches—really not more than a full 4 inches in most cases.

That a full-grown bull fur seal is between 6 and 7 feet in length, with an average of 6½ feet, for the entire rookery; that its greatest body diameter, through its shoulders and under its "wig," is an average of 2½ feet, tapering rapidly from here to the tip of nose and root of tail.

These statements of fact being understood, now I ask the reader to note the following:

No fur seal, young or old, when resting on the breeding grounds stretches itself out at full length on the rocks or earth unless injured in the lumbar regions, or deathly sick: and, the number you can see in this condition, you can count on your fingers at the end of every day's close observation of hundreds of thousands.

The female fur seals and their young take three typical positions when hauled out on the breeding grounds, as shown in figs. 1, 2, and 3; while the pups add a fourth position assumed by curling themselves up so as to form a round ball, as in fig. 4; and the adult males take relatively the same positions of the females above indicated; but, owing to the great fatigue that ensues from fighting among themselves and serving the females, they sprawl out at intervals in almost every conceivable form except that of stretching themselves out at full length. All fur seals when at rest invariably throw their hindquarters up under their loins, just as a dog or cat does; in the case of the hair seals, it is the reverse. Now, understanding these points, the reader will please take a survey of the following diagrams, which show a female seal outlined as she rests on 4 square feet of ground and her pup as it lies by her.²

The following diagram shows the superficial area covered by a "bull" as it rests so as to cover the greatest space in any one posture that it naturally assumes.

¹ These detailed and expanded statements as to my method of calculating the numbers of fur seals in 1872-1874 were published in *Forest and Stream*, November 19, 1891, New York, pp. 347, 348. They were rendered necessary to meet the baseless criticism of a self-constituted authority who pretended to know a great deal about the subject before the Biological Society of Washington, October 17, 1891, but who, in fact, knew nothing.—[Author, January 30, 1895, Washington, D. C.]

² In my *Census Monograph of the Seal Islands* (Tenth Census, U. S. A., 1881), on page 50, is an error in the types, where I am made to say that a female fur seal requires "an area a little less than 2 square feet." This is self-evident nonsense not due to me, because on page 77 of my official report on this subject in 1874 (*Condition of affairs in Alaska*, Washington, 1875), the same sentence is correctly printed as a space "a little less than 2 feet square." The printer had my printed pages of 1875 to copy in the *Census Monograph*, and I did not detect the error at the time of issue, and really did not observe it until 1891.

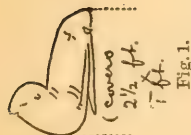


Fig. 1.

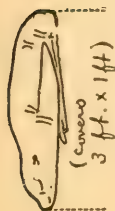


Fig. 2.



Fig. 3.

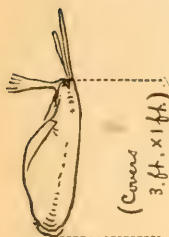
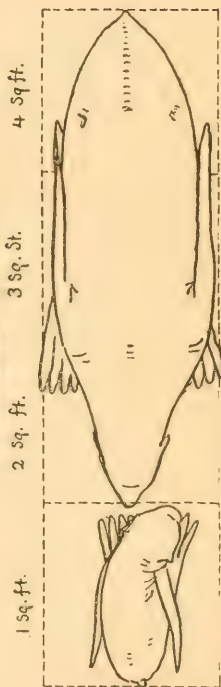
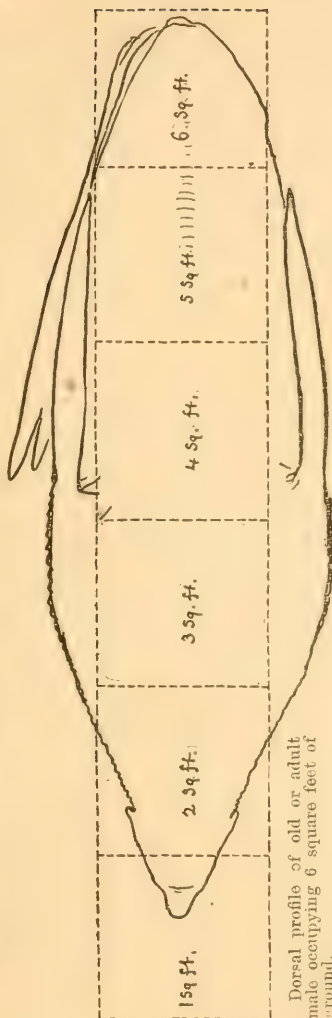


Fig. 4.



Dorsal profile of female fur-seal and young (three weeks old), as they rest on 4 square feet of ground, or an average of 2 square feet for each animal, big and little, when applied to the whole breeding field.

Now, is it not entirely plain that the females as they rest on the breeding grounds, require but 3 square feet of surface; that their pups require a trifle less than 1 square foot each, and that the bulls or adult males occupy little more than 8 or 10 square feet? But, right at this point, you may reasonably ask, "While it is clear that 4 square feet of area will embrace a female fur seal and her offspring, yet why do you ignore that larger space which you admit the bull occupies?"

For this reason: I have not been able to fix upon the number of virgin females which have been upon this breeding ground during the rutting season, for the reason that these females naturally leave no mark behind them of their being here, as the other classes of females do, and they do not remain themselves long on the field after being served; so, it was reasonable to give each bull an average of at least four of these nubbles, at the lowest calculation. This would cover the ground which he occupies, and reduces the whole basis of calculation to the simplest form, viz, 2 square feet for each animal, big and little—bulls, cows, and pups—that existed on those breeding grounds as these animals hauled out and bred in 1872-1874.

Everybody admitted in 1872-1874, who was on the islands and especially charged with observing the seals, that I was right in then saying that the seals obeyed a natural law of distribution over a given area of ground when breeding; that they never crowded here or thinned out there; that the ground was densely occupied and uniformly, no matter whether only a belt under the cliffs or where the rookery ground extended for hundreds of feet away back from the sea margin.

The dense massing of the seals on the rookery ground was then made evident to the most careless observer when his attention was fixed on the subject. It was made by the appearance of the pups themselves, which, between the 10th and 20th of July every year, lay in so solidly together that the ground itself seemed fairly covered by them alone, since not more than one-third of the mothers were on shore among the pups at any one time.

Before summing up the grand total, I shall now, in sequence, review each one of the several rookeries of St. Paul, taking them in their order as they occur, going north from the Reef point. The accompanying maps show the exact area occupied by the breeding seals and their young in the season of 1874, which is the date of my latest field work on the Pribilof Islands up to this year.

I may add that my method of surveying these breeding grounds in 1872-1874 was by means of measured base lines, taking my angles and cross bearings with an azimuth compass. In 1890, I used a fine prismatic compass; otherwise, precisely the same method was again employed. I made a careful land survey of each rookery on St. Paul Island between May 22 and June 4, so that when the females all arrived by July 10, I was able to then go out upon each one of these rookeries with my finished plat of the land in hand: and, upon it, in the field, again plat the massing of the breeding animals as they exhibited themselves, without a moment's delay, so as to properly and deliberately finish the entire work before the rutting season was over by July 20. By this time those rookeries are scattering and scattered, as they always are by the lapse of that period, since the old bulls then relax their absolute control of their harems and permit all classes to wander at will.

In this connection it is pleasant for me to say now, that in 1874 I was accompanied by Lieut. Washburn Maynard, U. S. N., who, being also a trained topographer, aided me in verifying my surveys of 1872-73. He gave this subject close attention. He appreciated its importance, and in his published report to the Secretary of the Navy in 1875, he uses the following language:

It is of very great significance in this connection to know how many seals come annually to the islands, or rather to understand how many may be killed for their skins annually, without causing less to come hereafter than do at the present time. To determine how many there are with accuracy is a task almost on a par with that of numbering the stars. The singular motion of the animals when on shore, the great variety in size, color, and position; the extent of surface over which they are spread, and the fact that it can not be determined exactly what proportion of them of their several classes are on shore at any given time; all these desiderata for comprehension make it simply impossible to get more than an approximation of their numbers. They have been variously estimated at from one to fifteen millions.

I think the most accurate enumeration yet made is that by Mr. H. W. Elliott,

special agent of the Treasury Department, in 1872. This calculation is based upon the hypothesis that the breeding seals are governed in hauling by a common and invariable law of distribution, which is that the area of the rookery ground is directly proportional to the number of seals occupying it. He estimates that there is one seal to every 2 square feet of rookery surface. Hence the problem is reduced to the simple operation of obtaining half the sum of the superficial area of all the rookeries in square feet. He surveyed these breeding grounds of both islands in 1872 and 1873, when at their greatest limit of expansion, and obtained the following results: Upon St. Paul Island there were 6,060,000 feet of ground, occupied by 3,030,000 breeding seals and their young. On St. George Island he announced 326,840 square feet of superficial rookery area, occupied by 163,420 breeding seals and their young; a total for both islands of 3,193,420 breeding seals and their young. The number of nonbreeding seals can not be determined in the foregoing manner, as they haul most irregularly, but it seems to me probable that they are nearly as numerous as the other class. If so, it would give not far from 6,000,000 as the stated number of seals of all kinds which visited the Pribilof Islands during the season of 1872.

It is likely that these figures are not far from the truth, but I do not think it necessary myself to take into consideration the actual number of seals in order to decide the question of how many can be taken each year without injury to the fishery. The law that the size of the rookeries varies directly as the number of seals increases or diminishes seems to me, after close and repeated observation, to be correct. All the rookeries, whether large or small, are uniform in appearance, alike compact, without waste of space, and never crowded. Such being the case, it is unimportant to know the actual number of seals upon the rookeries. For any change in the number of seals, which is the point at issue, increases or decreases in size, and the rookeries, taken collectively, will show a corresponding increase or decrease in the number of breeding seals; consequently, changes in the aggregate of pups born annually, upon which the extent and safety of the fisheries depend, can be observed accurately from year to year by following these lines of survey.

If, then, a plan or map of each rookery be made every year, showing accurately its size and form when at its greatest expansion, which is between the 10th and 25th of July, annually, a comparison of this map will give the relative number of the breeding seals as they increase or diminish from year to year. I submit with this report maps of St. Paul and St. George islands, showing the extended location of breeding rookeries and hauling grounds upon them. These maps are from surveys made in July, 1874, by Mr. Elliott and myself, and a map of each rookery on both islands drawn from careful surveys made by Mr. Elliott in 1872, show them now as they were in the season of 1874 as compared with that of 1872. I respectfully recommend that enlarged copies of these latter maps be furnished to the Government agents in charge of the islands, and that they be required to compare them each year with the respective rookeries, and note what change in size and form, if any, exists upon them. This, if carefully done, will afford data after a time, by which the seal fisheries can be regulated with comparative certainty, so as to produce the greatest revenue to the Government without injury to this valuable interest. (Forty-fourth Congress, first session, House Ex. Doc. No. 43, pp. 4, 5.)

This finished work of 1872-1874 I reproduce in the following maps of the several rookeries of St. Paul Island, and add the hauling grounds of St. George Island to the original survey of 1874. The smallness of the rookeries on the latter island permits this addition to these charts, but the hauling grounds of St. Paul for 1872-1874 can not be drawn upon so small a scale and require a special general map of the entire island itself to properly show them. This map appears under Section II following. The hauling grounds of St. George are so limited in area that a general map of this island to clearly show them would need an immensely enlarged scale. The general position, however, of the St. George rookeries and hauling grounds is clearly defined on my revised map of St. George Island under the head of Section II.

I pass to a description in detail of each rookery of the Pribilof Islands, giving my first published account of them as they appeared in 1872-1874, and each original description is then supplemented by my notes and surveys of last summer. The accompanying maps are so tinted as to express clearly the status of 1872-1874 as compared with the condition of 1890.¹

¹This combination of the work of 1872-1874 and 1890 upon one chart of each rookery is much better and more satisfactory than to publish the original survey by itself, with a duplicate series of charts for 1890.

THE REEF ROOKERY (1872-1874).

[Its condition and appearance July, 1874.]

By reference, first, to the general map, it will be observed that this large breeding ground, on that grotesquely shaped neck which ends in the Reef Point, is directly contiguous to the village—indeed, it may be fairly said to be right under the lee of the houses on the hill. It is one of the most striking of all the rookeries, owing probably to the fact that on every side it is sharply and clearly exposed to our vision as the circuit is made in boats. A reach of very beautiful, drifting sand a quarter of a mile long, between the village hill and the Reef bluffs separates the breeding grounds proper, from the habitations of the people. These Zoltai sands are, however, a famous rendezvous for the holluschickie: and, from them, during the season, the natives make regular drives, having only to step out from their houses in the morning and walk but a few rods to find their fur-bearing quarry.

Passing over these sands on our way down to the Point, we quickly come to a basaltic ridge or backbone, over which the sand has been rifted by the winds, and which supports a rank and luxuriant growth of the *Elymus* and other grasses, with beautiful flowers. A few hundred feet farther along our course, brings us in full view, as we look to the south, of one of the most entrancing spectacles which seals afford to man. We look down upon and along a grand promenade ground which slopes gently to the eastward, and trends southward away to the water from those abrupt cliffs bordering the sea on the west, over a parade plateau as smooth as the floor of a ballroom: 2,000 feet in length, from 500 to 1,000 feet in width, over which multitudes of holluschickie are filing in long strings, or deploying in vast platoons, hundreds abreast, in an unceasing march and countermarch! The breath which rises into the cold air from a hundred thousand hot throats hangs like clouds of white steam in the gray fog itself; indeed, it may be said to be a *seal fog* peculiar to the spot, while the din, the roar arising over all, defies our description.

We notice to our right and to our left, the immense solid masses of the breeding seals at Garbotch, and those stretching and trending around nearly a mile from our feet, far around to the Reef Point below and opposite the parade ground, with here and there a neutral passage left open for the holluschickie to go down and come up from the waves.

The adaptation of this ground of the Reef rookery to the requirements of the seal is perfect. It so lies that it falls gently from its high Zoltai Bay margin on the west to the sea on the east, and upon its broad expanse not a solitary puddle of mud-spotting is to be seen, though everything is reeking with moisture, and the fog even dissolves into rain as we view the scene. Every trace of vegetation upon this parade has been obliterated. A few tufts of grass capping the summits of those rocky hillocks indicated on the eastern and middle slope are the only signs of botanical life which the seals have suffered to remain.

A small rock, Seevitchie Kammin, 800 or 900 feet right to the southward and out at sea, is also covered with the black and yellow forms of fur seals and sea lions. It is environed by shoal reefs, rough and kelp-grown, which navigators prudently avoid.

This rookery of the Reef, properly, has 4,016 feet of sea margin, with an average depth of 150 feet, making ground for 301,000 breeding seals and their young. Garbotch rookery has 3,660 feet of sea margin, with an average depth of 100 feet, making ground for 183,000 breeding seals and their young, an aggregate for this great Reef rookery of 484,000



July 10th, 1890.

Sea Margin of REEF ROOKERY beginning at Foot of FOX HILL

300	75	av. depth	= 22,000	sq. ft.
30	"	"	= 9,000	"
200	70	"	= 14,000	"
100	80	"	= 8,000	"
100	20	"	= 3,000	"
900	75	"	= 67,500	"
1400	30	"	= 28,000	"
500	"E" and "F"	"	"	"
300	70 ft. av. depth	= 15,000	"	"
300	"G"	"	"	"
100	100	"	= 20,000	"
Jag	10	"	= 3,000	"
Jag "A"	250 deep,	"	"	"
"B"	400 deep,	"	"	"
"C"	250 deep,	"	"	"
"D"	100 ft. av. width	= 40,000	"	"
"E"	100 ft. av. width	= 15,000	"	"

Scale 800
Reef 281,000, making ground for 240,500 on Reef Rookery
Ground 15,000

Jags "E," "F," "G" included in Sea Margins

GARBOTCH Sea Margin beginning under "Can" to "B's Bend" base

15	av. depth	= 12,000	sq. ft.
300	" from B's Bend to Jag "O,"	"	"
60	av. depth	= 15,000	"
1,100	" from Jag "O" to Jag "L"	"	"
40	av. depth	= 24,000	"
500	" from Jag "L" to Jag "J"	"	"
30	av. depth	= 15,000	"
700	" from Jag "J" to end	"	"
15	av. depth	= 10,500	"
Jag "R"	75 ft. deep, 75 ft. wide	= 5,625	"
"O"	60 " 100 "	= 6,000	"
"N"	60 " 150 "	= 9,000	"
"M"	150 " 40 "	= 6,000	"
"L"	70 " 30 "	= 2,100	"
"K"	250 " 40 "	= 10,000	"
"J"	185 " 80 "	= 14,800	"
"I"	185 " 80 "	= 14,800	"
"H"	100 " 20 "	= 2,000	"
		= 120,500	"

Reef Pt.

Reef smash

Serviche Kammun

THE "REEF" AND "GARBOTCH"

Land Argus taken May 22d and June 7th, 1890.
Rookery Lines taken July 10th, 1890
and drawn by Henry W. ELLIOTT and CHAS. J. GOFF.
Scale 1,000 feet to an inch

Area and Position of the Breeding
Seals July 10th, 1890

Area and Position of the Breeding
Seals July 10th, 1892

Area and Position of the Hauling Grounds Season of 1890





A drawing from nature by the author.

REEF AND GARBOTCH ROOKERIES, FROM FOX HILL, SAINT PAUL ISLAND, AUGUST 9, 1890.

View looking south over the desolate hauling grounds known as the "Parade" ground in 1872-1874; then troops of tens of thousands of seals were hauling over its surface; to day, not a suggestion even of such life! Grass and flowers are springing up all over its seal-polished surface of 1874.

breeding seals and their young. Heavy as this enumeration is, yet the aggregate only makes the Reef rookery third in importance compared with the others which we are yet to describe.

THE REEF ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

On the accompanying map of this breeding ground the area and position of the massed seal life as surveyed in 1872, is shown by a lighter tint, over which the reduced form and number of 1890 is sharply drawn in dark relief; the ragged, scattered massing of to-day is also clearly shown by this survey; that solid, uniform organization of 1872 is not more than suggested by it over the entire field. Those curious "jags" of breeding seals which show so plainly on the Garbotch slope, form the most striking feature of that changed order of affairs, which declares a reduction of more than one-half of the females, and fully nine-tenths of the males on this rookery.

Then, that splendid parade ground of 1872 is now fairly deserted—grass and mosses and lichens and even flowers are taking root everywhere over its polished surface of 1872; and Zoltoi sands—it has not been visited by young male seals this year during the sealing season—none left to come!

The whole of this Reef neck in 1872, south of Grassy Summit and Fox Cliff, was entirely bare of grass or any vegetation whatever, except lichens on inaccessible rocks to seals, and tufts of grass on the overhanging points and cliff edges of the west shore; but, on the 9th of last August, as I stood overlooking the whole field from the summit of Fox Cliff, *the interior of it was fairly green*, and only straggling bands of a dozen seals here, and a hundred there, were hauling over it.

Eighteen years ago, these slopes of Garbotch and the Reef parade were covered with angry, eager, lusty bulls, two and three weeks before the first cows even arrived. They came in by the 5th to 22d of May in such numbers as to fill the space at close intervals of from 7 to 10 feet apart, solidly from the shore line to the ridge summit: and over, even, so far that it required the vigorous use of a club before we could get upon Old John Rock from the rear; then, too, at that time they were fighting in every direction under our eyes.

This season I do not observe a bull here, where I saw at least ten at this time eighteen years ago! Now, not a fight in progress anywhere here; there are not bulls enough to quarrel. They are now scattered apart so widely over this same ground as to be 100 and even 150 feet apart over ground where in 1872, an interval of 10 feet between them did not exist—was not possible to be seen.

The labor of locating and maintaining a position on the rookery then was a serious business for these bulls which came in last; and it was so all the time to those males that occupied the water line of the breeding grounds. A constantly sustained fight between the newcomers and the occupants progressed morning, noon, and night, without cessation: frequently resulting in death to the combatants. In 1874, I said:

It appears from my survey of these breeding grounds that a well-understood principle exists among the able-bodied bulls, to wit, that each one shall remain on his ground, which is usually about 6 to 8 feet square, provided that at the start, and from that time until the arrival of the females, he is strong enough to hold this ground against all comers; inasmuch as the crowding in of the fresh arrivals often causes the removal of those which, though equally able bodied at first, have exhausted themselves by fighting earlier and constantly; they are finally driven by these fresher animals back farther and higher up on the rookery, and sometimes off altogether.

Many of these bulls exhibit wonderful strength and desperate courage. I marked one veteran at Garbotch who was the first to take up his position early in May, and that position, as usual, directly at the water line. This male seal had fought at least forty or fifty desperate battles, and fought off his assailants every time—perhaps nearly as many different seals which coveted his position—and when the fighting season was over (after the cows are mostly all hauled up), I saw him still there, covered with scars and frightfully gashed—raw, festering, and bloody, one eye gouged out—but lording it bravely over his harem of fifteen or twenty females, who were all huddled together on the same spot of his first location and around him.

In order that every step which I have taken in making these surveys as presented shall be understood, I submit the following detailed figures which, taken in conjunction with the map, explain themselves and declare the method and manner of my work:

Detailed analysis of the survey of Reef rookery July 10, 1890.

[Sea margin of Reef rookery, beginning at foot of Fox Hill.]

	Square feet.
300 feet sea margin, beginning at foot of Fox Hill, with 75 feet average depth, massed.....	22,500
300 feet from thence to first point, with 30 feet average depth, massed.....	9,000
200 feet from thence, with 70 feet average depth, massed.....	14,000
100 feet from thence, with 80 feet average depth, massed.....	8,000
100 feet from thence, with 20 feet average depth, massed.....	2,000
900 feet from thence, with 75 feet average depth, massed.....	67,500
1,400 feet from thence, with 20 feet average depth, massed.....	28,000
500 feet from thence (E and F jags included), with 30 feet average depth, massed.....	15,000
200 feet from thence (G jag included), with 100 feet average depth, massed.....	20,000
300 feet from thence to end of Reef rookery, with 10 feet average depth, massed.....	3,000
Jag A is 250 feet deep above sea margin, with 60 feet average width, massed.....	15,000
Jag B is 400 feet deep above sea margin, with 60 feet average width, massed.....	24,000
Jag C is 400 feet deep above sea margin, with 100 feet average width, massed.....	40,000
Jag D is 130 feet deep above sea margin, with 100 feet average width, massed.....	13,000
Total square feet.....	281,000

This makes ground for and declares the presence of 140,500 seals—bulls, cows, and pups.

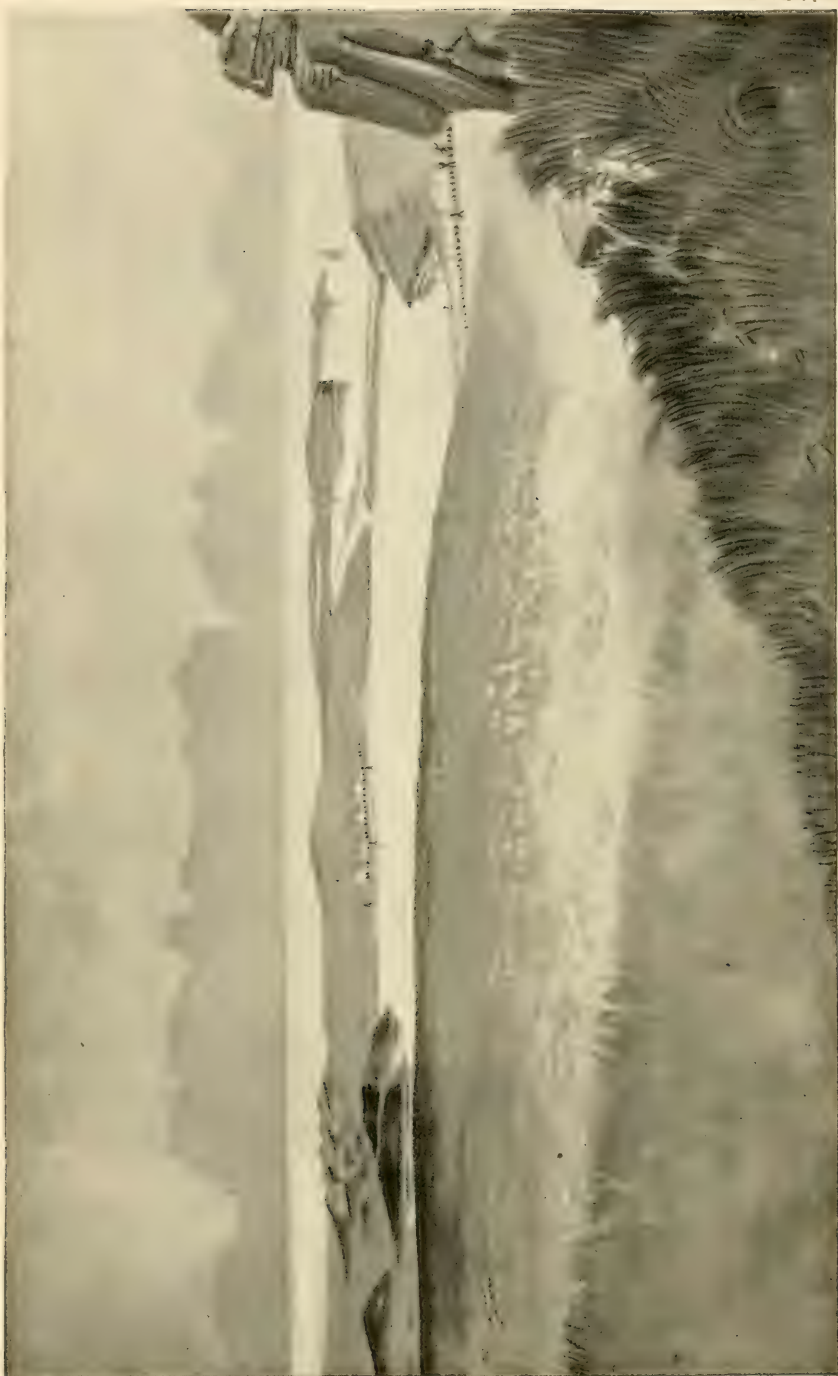
Detailed analysis of the survey of Garbotch rookery July 10, 1890.

[Sea margin of Garbotch rookery, beginning under Cap.]

	Square feet.
800 feet sea margin, beginning under Cap to Black Bend, with 15 feet average depth, massed.....	12,000
300 feet sea margin from Black Bend to Jag O, with 60 feet average depth, massed.....	18,000
1,100 feet sea margin from Jag O to Jag L, with 40 feet average depth, massed.....	44,000
500 feet sea margin from Jag L to Jag J, with 30 feet average depth, massed.....	15,000
700 feet sea margin from Jag J to end of Garbotch rookery, with 15 feet average depth, massed.....	10,500
Jag R is 75 feet deep above sea margin, with 75 feet average width, massed.....	5,625
Jag Q is 60 feet deep above sea margin, with 200 feet average width massed.....	12,000
Jag O is 70 feet deep above sea margin, with 70 feet average width, massed.....	4,900
Jag N is 60 feet deep above sea margin, with 150 feet average width, massed.....	9,000
Jag M is 150 feet deep above sea margin, with 40 feet average width, massed.....	6,000
Jag L is 70 feet deep above sea margin, with 30 feet average width, massed.....	2,100
Jag K is 250 feet deep above sea margin, with 40 feet average width, massed.....	10,000
Jag J is 185 feet deep above sea margin, with 80 feet average width, massed.....	14,800
Jag I is 185 feet deep above sea margin, with 20 feet average width, massed.....	3,700
Jag H is 100 feet deep above sea margin, with 20 feet average width, massed.....	2,000
Total square feet.....	169,625

Or ground for 84,802 seals—bulls, cows, and pups. Briefly summed up, the Reef rookery has (July 10, 1890) 4,300 feet sea margin with 65½





A drawing from nature by the author.

THE REEF POINT AND VILLAGE HILL FROM THE SUMMIT OF TELEGRAPH HILL, SAINT PAUL ISLAND, JULY 7, 1890.

View looking south over the lagoon and village cove. Natives bringing a drive over from Tolstoi in the foreground; a drive en route to the village killing grounds in the middle distance, from Lukannon.

feet of average depth, making ground for 140,500 fur seals—bulls, cows, and pups; Garbotch rookery has (July 10, 1890) 2,400 feet sea margin with 70 $\frac{2}{3}$ feet of average depth, making ground for 84,802 fur seals—bulls, cows, and pups; thus declaring a total for this reef peninsula of only 225,302 seals against the total of 484,000 which existed here in 1872-1874, and which were massed upon this ground as indicated on the accompanying map.

LAGOON ROOKERY (1872-1874).

[*Its condition and appearance July, 1874.*]

We now pass from the reef up to the village, where one naturally would not expect to find breeding seals within less than a pistol shot's distance from the native houses; but, it is a fact, nevertheless, for on looking at the sketch map of the Lagoon rookery herewith presented, it will be noticed that I have located a little gathering of breeding seals right under the village hill to the westward of that place called Nah Speel. This is in itself an insignificant rookery and has never been a large one, though it is one of the oldest on the island. It is only interesting, however, superficially so, on account of its position, and the fact that through every day of the season half the population of the entire village go to and come from the summit of the bluff, which overhangs it: there they peer down for hours at a time upon the methods and evolutions of the "kautickie" below, the seals themselves looking up with intelligent appreciation of the fact that, though they are in the hands of man, yet he is wise enough not to disturb them there as they rest.

If at Nah Speel, or at that point rounding into the village cove, there were any suitable ground for a rookery to grow upon or spread over, the seals would doubtless have been there long ago. There are, however, no such natural advantages offered them; what there is they have availed themselves of.

Looking from the village across the cove and down upon the lagoon, still another strange contradiction appears—at least it seems a natural contradiction to one's usual ideas. Here we see the Lagoon rookery, a reach of ground upon which some 25,000 or 30,000 breeding seals come out regularly every year during the appointed time, and go through their whole elaborate system of reproduction, without showing the slightest concern for or attention to the scene directly east of them and across that shallow slough not 40 feet in width. There are the great slaughtering fields of St. Paul Island; there are the sand flats where every seal has been slaughtered for years upon years back, for its skin; and even as we take this note, forty men are standing there, knocking down a drove of 2,000 or 3,000 holluschickie for the day's work: and as they labor, the whacking of their clubs and the sound of their voices must be as plain to those breeding seals, which are not 100 feet from them, as it is to us, a quarter of a mile distant. In addition to this enumeration of disturbances, well calculated to amaze and dismay and drive off every seal within its influence, are the decaying bodies of the last year's catch—75,000 or 85,000 unburied carcasses—that are sloughing away into the sand, which two or three seasons from now, Nature will, in her infinite charity, cover over with the greenest of all green grasses. The whitened bones and grinning skulls of over 3,000,000 seals have bleached out on that slaughtering spot, and are buried below its surface now!

Directly under the north face of the village hill, where it falls to the narrow flat between its feet and the cove, the natives have sunk a well.

It was excavated in 1857, they say, and subsequently deepened to its present condition in 1868. It is 12 feet deep, and the diggers said that they found bones of the sea lion and fur seal thickly distributed every foot down, from top to bottom. How much lower these osteological remains of prehistoric pinnipeds can be found no one knows as yet. The water here on that account has never been fit to drink, or even to cook with; but being soft, was and is used by the natives for washing clothes, etc. Most likely it records the spot where the Russians, during the heydays of their early occupation, drove the unhappy visitors of Nah Speel to slaughter. There is no Golgotha known to man elsewhere in the world as extensive as this one of St. Paul.

Yet, the natives say that this Lagoon rookery is a new feature in the distribution of the seals; that when their people first came here and located a part of the present village, in 1824 up to 1847, there never had been a breeding seal on that Lagoon rookery of to-day; so they have hauled up here from a small beginning, not very long ago, until they have attained their present numerical expansion, in spite of all these exhibitions of butchery of their kind, executed right under their eyes and in full knowledge of their nostrils, while the groans and low moanings of their stricken species stretched out beneath the clubs of the sealers must have been far plainer in their ears than they are in our own!

Still they come, they multiply, and they increase, knowing so well that they belong to a class which intelligent men never did molest; to-day, at least, they must know it, or they would not submit to these manifestations which we have just cited, so close to their knowledge.

The Lagoon rookery, however, never can be a large one on account of the very nature of the ground selected by the seals: for, it is a bar simply pushed up above the surf wash, of bowlders, waterworn and rounded, which has almost inclosed and cut out the Lagoon from its parent sea. In my opinion, the time is not far distant when that estuary will be another inland lake of St. Paul, walled out from salt water and freshened by rain and melting snow, as are the other pools, lakes, and lakelets on the island.

LAGOON ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

There has been little or no change in the character of the topographical features of the Lagoon rookery since my survey of 1872, except that the sea wall of bowlders which separates the lagoon from Bering Sea, this breakwater, has been shoved up still higher by ice floes, some 6 or 10 feet perhaps. That shoving up of these bowlders, which compose the lagoon sea wall on which the rookery is established, has also resulted in shoaling the cove. This village lagoon has been filling up very perceptibly since 1868, when Hutchinson and Morgan were able to sail in a small sloop, drawing 6 feet of water, up to its head. To-day, such a vessel could not come nearer than a mile to their anchorage of 1868. The principal shoaling takes place in a direct line here between Tolstoi Point and the village hill, where a rocky reef seems to be slowly rising, pushed up by ice fields. The sloop yacht *Jabez Howe*, which was wrecked in 1873, on Akootan, is probably the last seagoing vessel that has or ever will gain an entrance to the village lagoon, St. Paul Island, or swing at anchor in the cove.

The singular location of this Lagoon rookery, in close contact with the killing grounds where most of the seals are slaughtered on St. Paul Island (save those killed at Northeast Point), and its immediate juxta-









LUKANNON ROOKERY, SAINT PAUL ISLAND.

Viewed from the abandoned hauling grounds on Volcanic Ridge, June 29, 1890.

position with the village, causes me to extend the lines of my survey of it, so as to include the entire site of the town, the killing grounds, the salt houses, and contiguous territory. It illustrates a remarkable paradox.

The natives say that when the village was first established here, it was placed under the southern slope of the Black Bluffs, near East Landing, in 1817; but the need of utilizing a good landing in the village cove finally became so urgent that, in spite of the present village site being then a large hauling ground for seals, with Nah Speel rookery in the foreground, the town was moved over and the seals driven off in 1824. This caused quite an exodus of breeding seals from Nah Speel, which established themselves then for the first time on the lagoon sea wall, across the cove. Prior to this date no fur seals had ever hauled there to breed.

The little rookery of Nah Speel has been gradually dwindling away since 1884; in 1886 only a few harems remained: and they disappeared altogether in 1887.

A detailed analysis of the survey of Lagoon rookery, as it is presented on the accompanying map, is unnecessary, since the eye at once grasps a simple extension of 1,500 feet of ragged sea margin and an irregular scattered massing, which is best expressed by allowing 12 feet of solid massing for the average depth. That gives ground for 9,000 seals—bulls, cows, and pups—July 12, 1890. The survey of 1872 gave a total here of 37,000 bulls, cows, and pups.

LUKANNON AND KEETAVIE ROOKERIES (1872-1874).

[Their condition and appearance July, 1874.]

The next rookeries in order can be found at Lukannon and Keetavie. Here is a joint blending of two large breeding grounds, their continuity broken by a short reach of sea wall right under and at the eastern foot of Lukannon Hill. The appearance of these rookeries is like all the others, peculiar to themselves. There is a rounded swelling hill at the foot of Lukannon Bay, which rises perhaps 160 or 170 feet from the sea, abruptly at the point, but swelling out gently up from the sand dunes in Lukannon Bay to its summit at the northwest and south. The great rookery rests upon the northern slope. Here is a beautiful adaptation of the finest drainage, with a profusion of those rocky nodules scattered everywhere over it, upon which the female seals so delight in resting.

Standing on the bald summit of Lukannon Hill, we can turn to the south and look over Keetavie Point, where another large aggregate of breeding seals comes under our eye. The hill falls away into a series of faintly terraced tables, which drop down to a flat that again abruptly descends to the sea at Keetavie Point. Between us and the Keetavie rookery, is the parade ground of Lukannon, a sight almost as grand as is that on the Reef, which we have feebly attempted to portray. The sand dunes to the west and to the north are covered with the most luxuriant grass, abruptly emarginated by the sharp abrasion of the hauling seals. This is shown very clearly on the general map. Keetavie Point is a solid basaltic shelf. Lukannon Hill, the summit of it, is composed of volcanic tufa and cement, with irregular cubes and fragments of pure basalt scattered all over its flipper-worn slopes. Lukannon proper has 2,270 feet of sea margin, with an average depth of 150 feet, making ground for 170,000 breeding seals and their young. Keetavie rookery has 2,200 feet of sea margin, with an average depth of 150 feet, making ground for 165,000 breeding seals and their young, a

whole aggregate of 335,000 breeding seals and their young. This is the point, where, down along the flat shoals of Lukannon Bay, the sand dunes are most characteristic, as they rise in their wind-whirled forms just above the surf wash. This also is where the natives come from the village during the early mornings of the season for driving, to get any number of holluschickie.

It is a beautiful sight, glancing from the summit of this great rookery hill up to the north, over that low reach of the coast to Tonkie Mees, where the waves seem to roll in with crests that rise in unbroken ridges for a mile in length each ere they break so grandly and uniformly on the beach. In these rollers the holluschickie are playing like sea birds, seeming to sport the most joyously at the very moment when the heavy billow breaks and falls upon them.

LUKANNON AND KEETAVIE ROOKERIES (1890).

[*Their condition and appearance July, 1890.*]

The unusually heavy loss sustained by Keetavie rookery, and the utter absence of the holluschickie, or killable young male seals, where they trooped in platoons of tens of thousands in 1872-1874 upon the Lukannon parade ground, made the view from Lukannon Hill an exceedingly sad one at any time last summer. Grass is growing thickly down to the very water's edge over the parade grounds of 1872-1874, and creeping into the rookery grounds also. This grass which springs up over an abandoned seal parade is quite different in fiber and color from that which has never been disturbed and destroyed by the seals. It is quickly noted and marked as "seal grass," since it grows closer and thicker and softer than all surrounding grasses.¹ There is no contradiction possible of its silent though eloquent testimony of the hour: of the absence of those swarming herds which so impressed me in 1872-1874, as they restlessly swept hither and thither over these grassy grounds and deserted fields of 1890.

A careful survey of the area and position of the breeding seals on Lukannon and Keetavie rookeries July 10, 1890, gives the following figures:

Detailed analysis of the survey of Lukannon rookery July 10, 1890.

[Sea margin of Lukannon rookery beginning at G and ending at D.]

	Square feet.
1,550 feet sea margin between G and F, with 70 feet average depth, massed...	108,050
350 feet sea margin between F and E, with 80 feet average depth, massed...	27,000
1,100 feet sea margin from E to D, too scattered and thin for an average depth.....	10,000
Total square feet.....	145,050

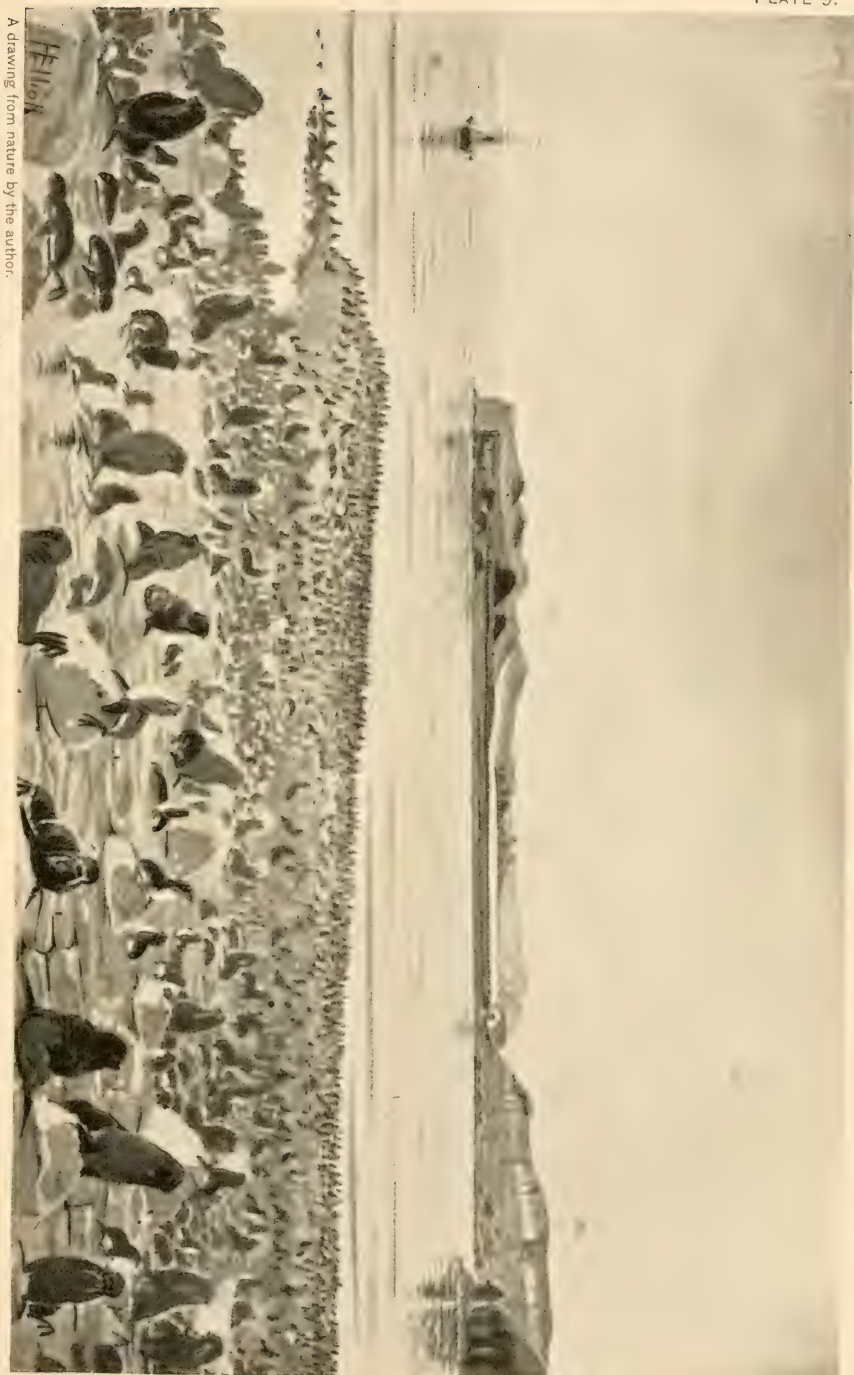
making ground for 72,525 seals—bulls, cows, and pups—against a total here in 1872-1874 of 171,000, a loss since then of 65 per cent.

Detailed analysis of the survey of Keetavie rookery July 10, 1890.

[Sea margin beginning at A and ending at D.]

	Square feet.
700 feet sea margin between A and B, with 30 feet average depth, massed....	21,000
1,000 feet sea margin between C and D, with 35 feet average depth, massed..	35,000
Total square feet.....	56,000

¹ *Glyceria angustata*: It is as conspicuous as a band of yellow emarginating that green ground of the indigenous growth of grasses and flora, where the seals have never been for a long, long time.



A drawing from nature by the author.

KETAVIE ROOKERY FROM KETAVIE ROCK, SAINT PAUL ISLAND, JULY 17, 1872.

View looking down over the rookery point to the east landing and the steamer's anchorage off the Black Bluffs. Neck of the Reef peninsula in the distance. [This particular breeding ground has suffered the greatest individual loss of life, since 1886, of all the rookeries on the Fribourg Islands. July, 1890.]



Zapadne Point W24°S 9500 feet

M. Hill

Middle Hill Hauling
1890

Abandoned hauling grounds of 1872-74.

TOLSTOI ROOKERY.

St. Paul's Island.

Land Angles surveyed and drawn May 25th—June 5th, 1890, by

HENRY W. ELLIOTT.

0 100 200 300 400 500
Scale in feet.



ANALYSIS.

800 ft. Sea Margin beginning at "A" with
80 " average depth massed = 64,000 sq. ft.
400 " Sea Margin beginning at "B" with
60 " average depth massed = 24,000 "
600 " Sea margin beginning at "C" with
10 " average depth massed = 16,000 "

Jag "E" has 300 ft. of depth with
40 ft. of av. width massed = 12,000 sq. ft.

Jag "F" has 100 ft. of depth with
40 ft. of av. width massed = 4,000 "

Jag "C" has 120 ft. of depth with
40 ft. of av. width massed = 4,800 "

124,800

Grand total of 124,800 sq. ft., or
ground for 62,400 Seals. 3/4 o.

Tolstoi Pt.

Seal Knob.

Abandoned Seal Parade of 1872.

Fox Castle

Area and Position of the Breeding Seals,
plotted July 10th, 1890, by
HENRY W. ELLIOTT
and
CHAS. J. GOFF.

	Area and Position of the Breeding Seals, Seasons of 1890.
	do. do. do. do. do. " 1872-74.
	do. do. do. do. do. of the Hauling Grounds of 1872-74.
	do. do. do. do. do. 1890.

LAND
Angles of "LUKANNON" and "KETAVIE,"
Taken May 25th—June 2d, 1890, and Drawn June 9th, 1890.
HENRY W. ELLIOTT.
Scale: 500 Feet to an Inch.

LUKANNON BAY.

Magnetic

LUKANNON Pt.

Analysis: LUKANNON ROOKERY.

1,550 ft. Sea Margin bet "G" and "F," with } Sq. Ft.
70 " Av. Depth, Massed = } 108,050
350 " Sea Margin, bet. "F" and "E," with }
80 " Av. Depth, Massed = } 27,000
1,100 " Sea Margin from "E" to "D," 100
Scattered and Thin for an Av. Depth, Allowed = 10,000

145,050 Sq. Ft. or Ground for
72,525 Seals. ♂ & ♀

Grand Total for LUKANNON,

Analysis: KETAVIE ROOKERY.

700 ft. Sea Margin Beginning at "A" and Ending at "B," with } Sq. Ft.
30 " Average Depth, Massed = } 21,000
1,000 " Sea Margin Beginning at "C" and Ending at "D," with }
35 " Average Depth, Massed = } 35,000
56,000

Grand Total 56,000 Sq. Ft., or Ground for
28,000 Seals. ♂ & ♀

KETAVIE ROCK.

KETAVIE Pt.

Seal Rookeries Plotted July 10th, 1890, by
HENRY W. ELLIOTT and CHARLES J. GOFF.

0 100 200 300 400 500

- Area and Position of the Breeding Grounds and Seals, July 10th, 1890.
- Area and Position of the Breeding Seals, July 15th, 1872.
- do. do. Hauling Grounds, 1874.
- do. do. do. do. 1890.



making ground for 28,000 seals—bulls, cows, and pups—against a total of 165,000 in 1872–1874, a loss of 137,000 seals, or 85 per cent, since then.

This rookery is one of the worst wrecks in the general diminution—it is the worst, having suffered a greater loss than any other on St. Paul, or St. George, for that matter.

On Lukannon this last summer, while there were two-fifths as many cows as in 1872, yet the bulls did not average more than one-fifteenth of the number they showed in 1872. On Keetavie it was no better; if anything a shade worse, no young bulls anywhere offering service or attempting to land. This undue proportion of the sexes and the general apathy and advanced age of the breeding bulls, is characteristic of all the rookeries to-day, as we view them on the Pribilof Islands. Here and there, at wide intervals, we observe an alert, virile bull, while its companions all around are stretched out in somnolence or regarding the incoming cows with positive indifference. In 1872 it was just the opposite. I made then the following note:

Between the 12th and 14th of June the first of the cow seals, as a rule, come up from the sea; then the long agony of the waiting bulls is over, and they signalize it by a period of universal, spasmodic, desperate fighting among themselves. Though they have quarreled all the time from the moment they first landed and continue to do so until the end of the season—in August—yet that fighting which takes place at this date is the bloodiest and most vindictive known to the seal. I presume that the heaviest percentage of mutilation and death among the old males from these brawls occur in this week of the earliest appearance of the females.

A strong contrast now between the males and females looms up, both in size and shape, that is heightened by the air of exceeding peace and dove-like amiability which the latter class exhibit, in contradistinction to the ferocity and saturnine behavior of the former.

TOLSTOI ROOKERY, 1872–1874.

[*Its condition and appearance July, 1874.*]

Directly to the west from Lukannon, up along and around the head of the Lagoon, is that seal-path road over which the natives bring the holluschickie from Tolstoi. We follow this and take up our position on several lofty grass-grown dunes, close to and overlooking another rookery of great size; this is Tolstoi.

We have here the largest hill slope of breeding seals on either island peculiarly massed on the abruptly sloping flanks of Tolstoi Ridge, as it falls to the sands of English Bay and ends suddenly in the precipitous termination of its own name, Tolstoi Point. Here the seals are in some places crowded up to the enormous depth of 500 measured feet, from the sea margin of the rookery to its outer boundary and limitation; and, when viewed as I viewed it in July, taking the angles and lines shown on the accompanying sketch map, I considered it, with the bluff terminating it at the south and its bold sweep, which ends on the sands of English Bay, to be the most picturesque, though it is not the most impressive, rookery on the island; especially so when that parade ground, lying just back and over the point and upon its table rock surface, is reached by the climbing seals under your eyes.

If the observer will glance at the map, he will see that the parade ground in question lies directly back, over, and about 150 feet above the breeding seals immediately under it. The sand dune tracts, which border the great body of the rookery, seem to check the holluschickie from hauling to the rear: for sand drifts here, in a locality so high and exposed to the full force of the wind, with more rapidity and consequently more disagreeable energy to the seals than anywhere else on the island.

A comical feature of this rookery is the appearance of blue foxes in those chinks under the parade ground and interstices of the cliffs. Their melancholy barking and short yelps of astonishment as we walk about, contrast quite sensibly with the utter indifference of the seals to our presence.

From Tolstoi, at this point, sweeping around 3 miles to Zapadne, is the broad sand reach of English Bay, upon which, and back over its gently rising flats, are the great hauling grounds of the holluschiekie, which I have indicated on the general map, and to which I made reference in a previous section of this chapter. Looking at the myriads of bachelor seals spread out in their restless hundreds and hundreds of thousands upon this ground, one feels the utter impotency of verbal description and reluctantly shuts his note and sketch books to gaze upon it with renewed fascination and perfect helplessness.

Tolstoi rookery has attained, I think, its utmost limit of expansion. The seals have already pushed themselves as far out upon the sand at the north as they can or are willing to go, while the abrupt cliffs, hanging over more than one-half of the sea margin, shut out all access to the rear for the breeding seals. The natives said that this rookery had increased very much during the last four or five years prior to the date of my making the accompanying survey. If it continues to increase, the fact can be instantly noted by checking off the ground and comparing it with the sketch map herewith presented. Tolstoi rookery has 3,000 feet of sea margin, with an average depth of 150 feet, making ground for 225,000 breeding seals and their young.

TOLSTOI ROOKERY, 1890.

[*Its condition and appearance July, 1890.*]

My picture of this rookery as above drawn in 1872, forms a remarkable contrast when held up in view of the picture which Tolstoi made in the height of the sealing season last summer. The scant, scattered massing of the breeding animals as exhibited this year over those same areas of splendid congregation in 1872, where 500 feet deep from the sea margin the breeding seals and their young laid in compact solid organization throughout the rutting season—this contrast between the condition of 1872 and 1890 was most vividly made here, since it is the only one of the St Paul rookeries which can be seen in all of its extent from a single point of view. It also was an exceedingly attractive rookery to visit in 1872, because from its height the vast sweep of those English Bay hauling grounds laid under your eyes, and the tens of thousands of holluschiekie which then hauled out there, in sport or in sleep, were always to be seen whenever you glanced that way.

Not even a faint suggestion of 1872 appeared on this hauling ground of English Bay last summer: and the shriveled form of Tolstoi rookery in 1890 is best expressed by the figures which follow explanatory of the accompanying map:

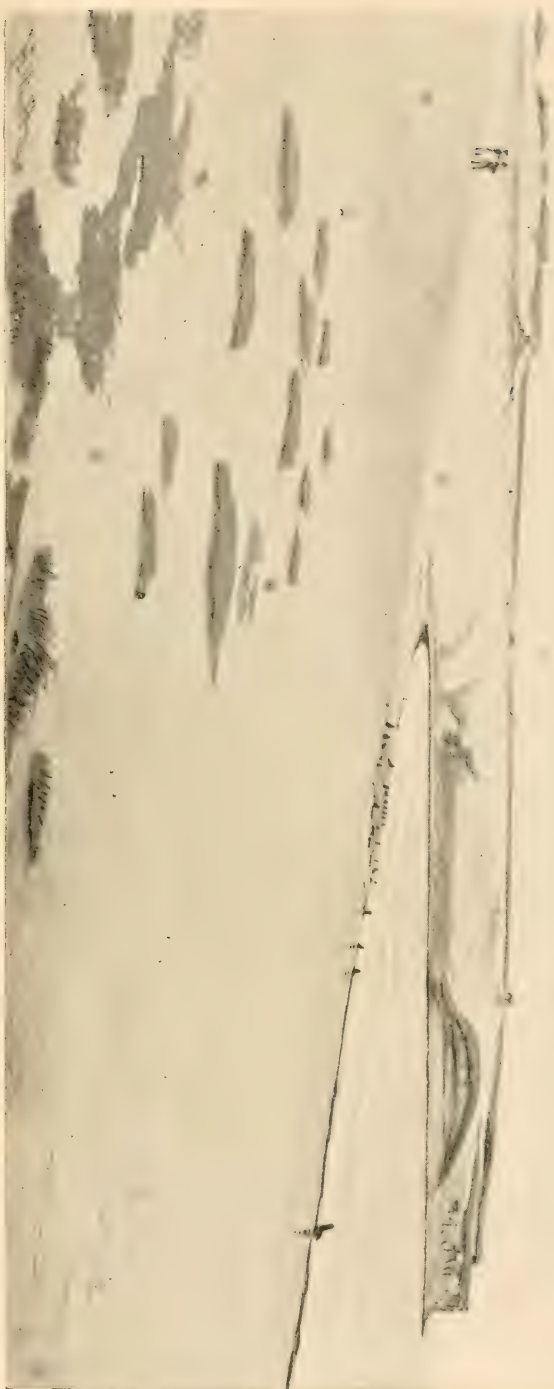
Detailed analysis of the survey of Tolstoi rookery July 10, 1890.

	Square feet.
800 feet sea margin between A and B, with 80 feet average depth, massed ..	64,000
400 feet sea margin between B and C, with 60 feet average depth, massed ..	21,000
1,600 feet sea margin between C and D, with 10 feet average depth, massed ..	16,000
Jag E has 300 feet of depth, with 40 feet average width, massed	12,000
Jag F has 100 feet of depth, with 40 feet average width, massed	4,000
Jag G has 120 feet of depth, with 40 feet of average width, massed	4,800
Total square feet	124,800

A drawing from nature by the author.

TOLSTOI ROOKERY FROM THE SANDS UNDER MIDDLE HILL, SAINT PAUL ISLAND, JULY 11, 1890.

View looking east over the hauling and breeding grounds. Only one-quarter of the breeding seals here to-day that were present when the author made his survey of 1872-1874; not one-tenth of the *holluschickie* present.







	2	
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making ground for 62,400 seals—bulls, cows, and pups—against a total of 225,000 in 1872-1874. These figures declare a decrease here of 162,600 seals since my earlier survey, or a loss of some 75 per cent.

While there appears to be a little more than one-fourth only of the females here as compared with their number of 1872, yet the proportion of loss in males is still more startling—there is not one-fifteenth of the showing made by the bulls in 1872-1874, and not a single young bull seen upon the ground offering service—not one even attempting to land at the water's edge. The half dozen that I did see on the outskirts of the rookery were evidently dropped from sealing drives, broken spirited and utterly worthless.

The topographical features of this ground are wholly unchanged since my survey of 1872. The sands still drift with their accustomed disagreeable energy backward and forward between Middle Hill and the base of the rookery; but being bare of seal life last summer, they seem to aid in the expression of a deeper air of desolation than that given to any other one spot on the islands save Keetavie.

ZAPADNIE ROOKERY (1872-1874).

[Its condition and appearance July, 1874.]

From Tolstoi, before going north, we turn our attention directly to Zapadnie on the west, a little over 2 miles as the crow flies across English Bay, which lies between them. Here again we find another magnificent rookery, with features peculiar to itself, consisting of great wings separating, one from the other, by a short stretch of 500 or 600 feet of the shunned sand reach which makes a landing and a beach just between them. The northern Zapadnie lies mostly on the gently sloping, but exceedingly rocky, flats of a rough volcanic ridge which drops there to the sea; it, too, has an approximation to the Tolstoi depth, but not to such a solid extent. It is the one rookery which I have reason to believe has sensibly increased since my first survey in 1872. It has overflowed from the boundary which I laid down at that time, and has filled up for nearly half a mile, a long ribbon-like strip of breeding ground to the northeast from the hill slope, ending at a point where a few detached rocks jut out, and the sand takes exclusive possession of the rest of the coast. These rocks aforesaid are called by the natives "Nearhpahskie Kammin," because it is a favorite resort for the hair seals. Although this extension of a very decided margin of breeding ground, over half a mile in length, between 1872 and 1876, does not in the aggregate, point to a very large increased number, still it is a gratifying evidence that the rookeries, instead of tending to diminish in the slightest, are more than holding their own.

Zapadnie in itself is something like the Reef plateau on its eastern face, for it slopes up gradually and gently to the parade plateau on top—a parade ground not so smooth, however, being very rough and rocky, but which the seals enjoy. Just around the point, a low reach of rocky bar and beach connects it with the ridge walls of Southwest Point. A very small breeding rookery, so small that it is not worthy of a survey, is located here. I think probably, on account of the nature of the ground, that it will never hold its own, and is more than likely abandoned by this time.

One of the prehistoric villages, the village of Pribilov's time, was established here between the point and the cemetery ridge, on which the northern wing of Zapadnie rests. The old burying ground, with its

characteristic Russian crosses and faded pictures of the saints, is plainly marked on the ridge. It was at this little bight of sandy landing that Pribilov's men first came ashore and took possession of the island, while some others, in the same season proceeded to Northeast Point, and to the north shore to establish settlements of their own order. When the indiscriminate sealing of 1868 was in progress, one of the parties lived here, and a salt house, which was then erected by them, still stands. It is in a very fair state of preservation, although it has never been since occupied, except by the natives who come over here from the village in the summer to pick the berries of the *Empetrum* and *Rubus*, which abound in the greatest profusion around the rough and rocky flats that environ the little lake adjacent. The young people of St. Paul are very fond of this berry festival, so called among themselves, and they stay here every August, camping out a week or ten days at a time, before returning to their homes in the village.

Zapadnie rookery has, the two wings included, 5,880 feet of sea margin, with an average depth of 150 feet, making ground for 441,000 breeding seals and their young, being the second rookery on the island as to size and importance.

The holluschickie that sport here on the parade plateau, and indeed over all of the western extent of the English Bay hauling grounds, have never been visited by the natives for the purpose of selecting killing drives since 1872, inasmuch as more seals than were wanted have always been procured from Zoltoi, Lukannon, and Lower Tolstoi points, which are all very close to the village. I have been told, since making this survey, that during the past year the breeding seals of Zapadnie have overflowed, so as to occupy all of the sand strip which is vacant between them on the accompanying map.

ZAPADNIE ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

It is impossible to convey that full sense of utter desolation which the vacant seal area of 1872 on this fine rookery aroused in my mind last July, while then making my survey of it. Grass and flowers springing up over those broad areas back of the breeding grounds here, where in 1872-1874, thousands upon thousands of young male seals hauled out and over, throughout the entire season, and were undisturbed by any man, not even visited by any one except myself! No one then even thought of such a thing as coming over from the village to make a killing at Zapadnie, there being more seals than wanted then close by at Tolstoi, Lukannon, and Zoltoi sands. This not alone, but that splendid, once clean-swept expanse of hauling ground in English Bay between the Zapadnies and Tolstoi, is all grass grown to-day except over its areas of drifting sand, with mosses, lichens, and flowers interspersed! It is entirely bare of seals save a lonely pod under Middle Hill.

Lower Zapadnie is certainly the roughest surfaced breeding ground peculiar to the seal islands: and it is a curious place on which to view the seals as they locate themselves, for as you walk along they suddenly appear and disappear as they lay in those queer little valleys and canyons here, which have been formed by lava bubbles of the geological time of the elevation of St. Paul Island from the sea. But to-day, so scant is the massing of the breeding seals here, that that unbroken uproar which boomed out from them in 1872 is wholly absent; it is



A drawing from nature by the author.

ZAPADNE ROOKERY, SAINT PAUL ISLAND, JULY 18, 1890.

Viewed from the crest of Cemetery Ridge, above Upper Zapadne; the killing gang coming over from the village with the batarrah.





The POLAVINA ROOKERIES,

St. Pierre Island

Latitudes Surveyed and Drawn, June 4th—6th, 1890.

by HENRY W. ELLIOTT.

Area and Position of the Breeding Seals Plotted July 13th, 1890.

by HENRY W. ELLIOTT & CHAS. J. GOFF.



positively quiet, save the subdued sheep-like¹ calling of the females and the lamb-like answer of their offspring.

As this breeding ground of Zapadnië was the second one in size and importance on St. Paul in 1872, the figures which my survey of last July warrant, show an extraordinary decrease here and make a melancholy exhibit.

Detailed analysis of the survey of Lower Zapadnië rookery July 11, 1890.

[Sea margin beginning at Q and ending at Zapadnië Point.]

	Square feet.
2,700 feet sea margin between Q and Zapadnië Point, with 20 feet average depth, massed	54, 000
Jag A is 400 feet deep above sea margin, with 50 feet average width, massed.	20, 000
Jag B is 300 feet deep above sea margin, with 60 feet average width, massed.	18, 000
Jag C is 380 feet deep above sea margin, with 35 feet average width, massed.	13, 300
Jag D is 200 feet deep above sea margin, with 75 feet average width, massed.	15, 000
Jag E is 175 feet deep above sea margin, with 75 feet average width, massed.	13, 125
Jag F is 350 feet deep above sea margin, with 60 feet average width, massed.	21, 000
Jag G is 200 feet deep above sea margin, with 60 feet average width, massed.	12, 000
Jag H is 125 feet deep above sea margin, with 40 feet average width, massed.	5, 000
Total square feet.....	171, 425

making ground for 85,705 seals—bulls, cows, and pups—against a total of 345,000 in 1872.

The figures for Upper Zapadnië are not much better. I regard it as a part and parcel of but one rookery, i. e., Zapadnië: but, for clearness of definition in survey, separate the wings.

Detailed analysis of the survey of Upper Zapadnië rookery July 11, 1890.

[Sea margin beginning at Q, ending at V, resumed at W, and ending at R.]

	Square feet.
1,200 feet sea margin between Q and V, with 40 feet average depth, massed...	48, 000
2,300 feet sea margin (beach) between W and R, with 10 feet average depth, massed	23, 000
Total square feet.....	71, 000

making ground for 35,000 seals—bulls, cows, and pups—against a total of 97,800 in 1872, or a total to-day of 121,205 for Zapadnië entire against 442,800 in 1872.

POLAVINA ROOKERY (1872-1874).

[*Its condition and appearance July, 1874.*]

Halfway between the village and Northeast Point lies Polavina: another one of the seven large breeding grounds on this island. The conspicuous cone-shaped head of Polavina Sopka rises clearly cut and smooth from the plateau at its base, which falls 2 miles to the eastward

¹Indeed, so similar is the sound that I noticed that a number of sheep which the Alaska Commercial Company had brought up from San Francisco to St. George Island, during the summer of 1873, were constantly attracted to the rookeries, and were running in among the holluschickie: so much so, that they neglected the good pasturage on the uplands beyond, and a small boy had to be regularly employed to herd them where they could feed to advantage. These transported *Ovide*, though they could not possibly find anything in their eyes suggestive of companionship among the seals, had their ears so charmed by the sheep-like accents of the female pinnipeds as to persuade them against their senses of vision and smell.

The sound which arose in 1872 from these great breeding grounds of the fur seal when thousands upon tens of thousands of angry, vigilant bulls were roaring, chuckling, and piping, and multitudes of seal mothers were calling in hollow bleating tones to their young, that in turn responded incessantly, is simply defiance to verbal description. It was, at a slight distance, softened into a deep booming, as of a cata-

and southeastward, sharp off into the sea, presenting a bluff margin over a mile in length, at the base of which the sea thunders incessantly. It exhibits a very beautiful geological section of the simple structure of St. Paul. The ringing, iron-like basaltic foundations of the island are here setting boldly up from the sea to a height of 40 or 50 feet, black and purplish red, polished like ebony by the friction of the surf and worn by its agency into grotesque arches, tiny caverns, and deep fissures. Surmounting this lava bed is a cap of ferruginous cement and tufa from 3 to 10 feet in thickness, making a reddish floor upon which the seals patter in their restless, never-ceasing evolutions, sleeping or waking, on the land. It is as great a single parade plateau of polished cement as is that of the Reef: but, we are unable from any point of observation, to appreciate it, inasmuch as we can not stand high enough to overlook it unless we ascend Polovina Sopka, and then the distances, with the perspective foreshortening, destroy the effect.

The rookery itself, occupies only a small portion of the seal-visited area at this spot. It is placed at the southern termination and gentle sloping of the long reach of bluff wall, which is the only cliff between Lukannon and Novastoshnah. It presents itself to the eye, however, in a very peculiar manner, and with great scenic effect when the observer scans it from the southern point of its mural elevation; viewed from thence, nearly a mile to the northeast, it rises as a front of bicolored lava wall, high above the sea that is breaking at its base, and is covered with an infinite detail of massed seals in reproduction. At first sight one wonders how they got there; no passages whatever can be seen, down or up. A further survey, however, discloses the common occurrence of rain-water runs between surf-beaten crevices, which make many stairways for the adhesive feet of *Callorhinus*, amply safe and comfortable.

For the reason cited in a similar example at Zapadni, no holluschickie have been driven from this point since 1872, though it is one of the easiest worked. It was, in the Russian times, a pet sealing ground with them. The remains of the old village have nearly all been buried in the sand near the lake, and there is really no mark of its early habitation, unless it be the singular effect of a human graveyard being dug out and despoiled by the attrition of seal bodies and flippers. The old cemetery just above and to the right of the barrabkie, near the little lake, was originally established, so the natives told me, far away from the hauling of the holluschickie. It was, when I saw it in 1876, in a melancholy state of ruin. A thousand young seals at least moved off from its surface as I came up, and they had actually trampled out many sandy graves, rolling the bones and skulls of Aleutian ancestry in every direction. Beyond this old barrabkie, which the present natives have established as a house of refuge for the winter when they are

ract; and I have heard it, with a light fair wind to the leeward, as far as 6 miles out from land on the sea; and even in the thunder of the surf and the roar of heavy gales it would rise up and over to your ear for quite a considerable distance away. It was the monitor which the sea captains anxiously strained their ears for when they ran their dead reckoning up and were laying to for the fog to rise in order that they might get their bearings of the land. Once heard they held on to the sound and felt their way in to anchor. The seal roar at Novastoshnah during the summer of 1872 saved the life of the surgeon and six natives belonging to the island, who had pushed out on an eggng trip from Northeast Point to Walrus Island. I have sometimes thought, as I have listened through the night to this volume of extraordinary sound, which never ceases with the rising or the setting of the sun throughout the entire season of breeding, that it was fully equal to the churning boom of the waves of Niagara. Night and day, throughout the season of 1872, this din upon the rookeries was steady and constant.



A drawing from nature by the author.

POLAVINA SOPKA: 550 FEET.

POLAVINA ROOKERY AND HAULING GROUND, SAINT PAUL ISLAND, JULY 18, 1872.

View looking NNE, "Polavina Sopka" in the middle distance, to the left; most of the seal life in this view belongs to the holuschickie on the great hauling ground, the main body of the breeding seals being to our left and back of this point of view.

trapping foxes, looking to the west over the lake, is a large expanse of low, flat swale and tundra, which is terminated by the rocky ridge of Kaminista. Every foot of it has been placed there subsequent to the original elevation of the island by the action of the sea, beyond all question. It is covered with a thick growth of the rankest sphagnum, which quakes and trembles like a bog under one's feet, but over which the most beautiful mosses ever and anon crop out, including the characteristic floral display before referred to in speaking of the island. Most of the way from the village up to Northeast Point, as will be seen by a cursory glance at the map, with the exception of this bluff of Polavina and the terraced table setting back from its face to Polavina Sopka, the whole land is slightly elevated above the level of the sea, and its coast line is lying just above and beyond the reach of the surf where great ledges of sand have been piled by the wind, capped with sheafs and tufts of rank-growing *Elymus*.

There is a small rookery which I call Little Polavina, indicated here, that does not promise much for the future. The sand cuts it off on the north, and sand has blown around so at its rear as to make all other ground not now occupied by the breeding seals there, quite ineligible. Polavina rookery has 4,000 feet sea margin, including Little Polavina, with 150 feet average depth, making ground for 300,000 breeding seals and their young.

POLAVINA ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

My survey, July 13, 1890, of this breeding ground shows it to be one of the two rookeries only, which have suffered on St. Paul Island no greater loss than from 50 to 55 per cent of their general form and number as recorded in 1872. Yet I can not avoid the conclusion, however, that this rookery has been hard driven from during the last eight years, since the chief hauling grounds lay directly up in the rear of the breeding lines. Therefore, when the shrinking of the supply of holluschickie began, the driving of the killable seals here involved a regular scraping of the large semicircular edge of Polavina rookery whenever a drive was made. In illustration of this, a drive made here on the 18th of July, brought in, out of a total of 1,541 animals, 172 old breeding bulls! which had been scraped up on the rookery margin by the native drivers, who *were obliged to take these old fellows along, or lose the handful of killable young male seals that they were after*. I witnessed this driving, and saw not only these old bulls, but cows swept up into the stampeded herd; their pups left bruised and helpless behind to starve and to otherwise perish.

This is a locality where, until 1872, like the Zapadni and Southwest Point areas, the fur seals on St. Paul Island had been undisturbed by the sealers since 1857; therefore, the holluschickie and the breeding seals had polished the whole surface of that high plateau laying gently back from the bluffs, a mile of sea margin, way back entirely free from vegetation, 1,000 to 2,000 feet; every vestige of vegetable growth utterly eliminated by their flippers. The reddish to blood-red breccia and cinders that compose the floor to this parade ground of Polavina was literally powdered by the attrition of seal flippers into an impalpable red dust, which, during every windy day, would rise in columns and clouds to betray the locality to your eye from all points of the island, and often has suggested to sailors at sea the idea of a steamer under way, within lee of the land. During misty, foggy, and wet days this

soil would and does now resolve itself into the condition of a rich moist humus: and, after heavy rains a thick paste, if puddled by the seals.

The natives in Russian times had a small village on the lake shore near by this rookery, and regularly worked this field especially severe, up to that season of utter diminution which ended in 1834 by the stopping of all killing for shipment on St. Paul and St. George. When that zapooska was ordered, the settlement at Polavina was abandoned: then its people removed to the present location, which was established in 1824; also, the Northeast Point village was brought down at this time to the existing town site, and that consolidation was final.

Since that time up to 1882, beyond a few small drives made early in June (driven for food), no seals in considerable number had been drawn from the hauling grounds of Polavina, from Zapadnie, or Southwest Point. But, as the regular source of abundant supply near the village became exhausted, then, in 1882, the draft upon these fine reserves of Polavina and Zapadnie became sudden and steady every killable seal was scraped up: easily at first, and ruggedly during the last two years: and I may add, with great severity during 1889, and also through the present season of 1890.

So, when I regard this ground to-day, after an interval of sixteen years since my last survey, I find a square declaration from the ground itself of loss to this rookery of one-half of its female life, while its breeding bulls are not equal to one-fifteenth of their number here in 1872. Then, too, the utter absence of a young bull on the vacant spaces in the rookery or in the water at its sea margin: and, still more remarkable in contrast, that pronounced utter absence of the holluschickie from their grand parade ground here—that silent, empty space before me on which at this time in 1872 anywhere from 75,000 to 100,000 young male seals were trooping in and out from the water, frolicking in tireless antics one with another or wrapped in profound sleep—this deserted parade ground of Polavina, like unto all the others on both islands, speaks most eloquently and truthfully of the present order and condition of these interests of our Government. My survey as exhibited on the accompanying chart gives the following figures:

Detailed analysis of the survey of Polavina rookery, July 13, 1890.

[Sea margin beginning at E and ending at D.]

	Square feet.
150 feet sea margin, from D to D ² , with 100 feet average depth, massed	15, 000
900 feet sea margin, from D ² to E ² , with 200 feet average depth, massed	180, 000
150 feet sea margin, from E ² to E, with 100 feet average depth, massed	15, 000
Jags 1, 2, 3, and 4 have 400 feet of sea margin, with 100 feet of average width.	40, 000
Total square feet.....	250, 000

making ground for 125,000 seals—bulls, cows, and pups—against a total of 240,000 in 1872.

Detailed analysis of the survey of Little Polavina rookery, July 13, 1890.

[Sea margin beginning at c and ending at d.]

	Square feet.
175 feet sea margin, from C to b, with 20 feet average depth, massed.....	3, 500
280 feet sea margin, from b to a, with 100 feet average depth, massed.....	28, 000
100 feet sea margin, from a to d, with 30 feet average depth, massed.....	3, 000
Total square feet.....	34, 500

making ground for 17,250 seals—bulls, cows, and pups—against a total of 60,000 in 1872. This survey gives a total for the Polavinas of 142,250 for 1890 against the total they possessed of 300,000 in 1872-1874.

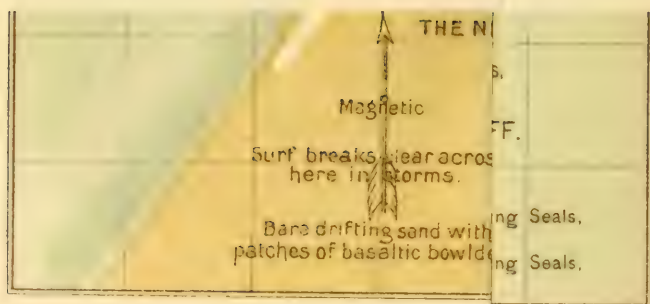


A drawing from nature by the author.

OLD BULLS SPRAWLED OUT ON POLAVINA, JUNE 3, 1890.

View showing the scant and scattered distribution of the bulls on the breeding grounds, season of 1890. Not one bull out here where ten were located at this time in 1872. Looking north from the sands and abandoned hauling grounds thereon.





NORTHEAST POINT OR NOVASTOSHNAH ROOKERY (1872-1874).

[Its condition and appearance July, 1874.]

Though this is the last of the St. Paul rookeries which I notice: yet it is so much greater than any other one on the island, or two others for that matter, that it forms the central feature of St. Paul, and in truth presents a most astonishing and extraordinary sight. It was a view of such multitudes of amphibians, when I first stood upon the summit of Hutchinson Hill and looked at the immense spread around me, that suggested to my mind a doubt whether the accurate investigation which I was making would give me full courage to maintain the truth in regard to this subject.

The result of my first survey here, presented such a startling array of superficial area massed over by the breeding seals that I was fairly disconcerted at the magnitude of the result. It troubled me so when my initial plottings were made, and I had worked them out so as to place them tangibly before me, that I laid the whole preliminary survey aside, and seizing upon the next favorable day went over the entire field again. The two plats then, laid side by side, substantially agreed, and I now present the great rookery to the public. It is in itself, as the others are, endowed with its own particular physiognomy, having an extensive sweep, everywhere surrounded by the sea, except at that intersection of the narrow neck of land which joins it to the island. Hutchinson Hill is the foundation of the point; a solid basaltic floor, upon which a mass of breccia has been poured at its northwest corner, which is so rough and yet polished so highly by the countless pattering flippers of its visitors, as to leave it entirely bare and bald of every spear of grass or trace of cryptogamic life. The hill is about 120 feet high; it has a rounded summit flecked entirely over by the holluschickie, while the great belt of breeding rookery sweeps high up on its seaward flanks, and around right and left for nearly $3\frac{1}{2}$ miles unbroken—an amazing sight in its aggregate, and infinite in its detail.

A picturesque feature, also, of the rookery here is the appearance of those tawny, yellowish bodies of several thousand sea lions which lie in and among the fur seals at the several points designated on the sketch map, though never far from the water. Sea Lion Neck, a little tongue of low basaltic jutting, is the principal corner where the natives take these animals from, when they capture them in the fall for their hides and sinews.¹

Cross or St. John Hill, which rises near the lake to a height of 60 or 70 feet, and is quite a landmark itself, is a perfect cone of sand entirely covered with a luxuriant growth of *Elymus*. It is growing constantly higher by the fresh deposit brought by wind, and is retained by the annually rising grasses.

At this point it will be noticed there is a salt house: and, here is the killing ground for Northeast Point, where 19,000 or 20,000 holluschickie are disposed of for their skins every season, their carcasses being spread out on the sand dunes between the foot of Cross Hill and Webster's house. A squad of seaters live there during the three or four

¹The sea lions breed on no one of the other rookeries at this island, the insignificant number that I noticed on Seevitchie Kammin excepted. At Southwest Point, however, I found a small sea lion rookery, but there are no breeding fur seals there. A handful of *Eumetopias* used to breed on Otter Island, but do not now, since it has been necessary to station Government agents there for the apprehension of fur-seal pirates during the sealing season.

weeks that they are engaged in this work. The holluschickie are driven from the large hauling grounds on the sand flats immediately adjacent to the killing grounds, being obtained without the slightest difficulty.

Here also was the site of a village, once the largest one on this island ere its transfer to the sole control and charge of the old Russian-American Company, ten years after its discovery in 1787. The ancient cemetery and the turf lines of the decayed barraboras are still plainly visible.

The company's steamer runs up here, watching her opportunity, she drops her anchor, as indicated on the general chart, right south of the salt house in about 4 fathoms of water; then the skins are invariably hustled aboard, no time being lost, because it is an exceedingly uncertain place to safely load the vessel.

The "podding" of these young pups in the rear of the great rookeries of St. Paul is one of the most striking and interesting phases of this remarkable exhibition of highly organized life. When they first bunch together they are all black, for they have not begun to shed the natal coat; they shine with an unctuous, greasy reflection, and grouped in small armies or great regiments on the sand-dune tracts at Northeast Point, they present a very extraordinary and fascinating sight. Although the appearance of the holluschickie at English Bay fairly overwhelms the observer with the impression of its countless multitudes, yet I am free to declare that at no one point in this evolution of the seal life, during the reproductive season, have I been so deeply stricken by the sense of overwhelming enumeration as I have when, standing on the summit of Cross Hill, I looked down to the southward and westward over a reach of 6 miles of alternate grass and sand-dune stretches, mirrored upon which were hundreds of thousands of these little black pups, spread in sleep and sport within this restricted field of vision. They appeared as countless as the grains of sand upon which they rested!

There is no impression in my mind really more vivid than is the one which was planted there during the afternoon of that July day when I first made my survey of this ground. Indeed, whenever I pause to think of the subject, this great rookery of Novastoshnah rises promptly to my view and I am fairly rendered voiceless as I try to speak in definition of the spectacle. In the first place, this slope from Sea Lion Neck to the summit of Hutchinsons Hill is a long mile, smooth and gradual from the sea to the hilltop. The parade ground lying between, is also nearly three-quarters of a mile in width, sheer and unbroken. Now, upon that area before my eyes, this day and date of which I have spoken, were the forms of not less than three-fourths of a million seals. Pause a moment. Think of the number: three-fourths of a million seals moving in one solid mass from sleep to frolicsome gambols, backward, forward, over, around, changing and interchanging their heavy squadrons, until the whole mind is so confused and charmed by the vastness of mighty hosts that it refuses to analyze any further! Then, too, I remember that the day was one of exceeding beauty for that region. It was a swift alternation overhead of those characteristic rain fogs, between the succession of which the sun breaks out with transcendent brilliancy through the misty halos about it. This parade field reflected the light like a mirror, and the seals, when they broke apart here and there for a moment, just enough to show its surface, seemed as though they walked upon the water. What a scene to put upon canvas, that amphibian host involved in those alternate rainbow lights and blue-gray shadows of the fog!



A drawing from nature by the author.

SEAL PUPS PODDING ON ZOLTOI, SAINT PAUL ISLAND, AUGUST AND SEPTEMBER, 1872.

Characteristic movements of the young fur seals when six to eight weeks old: they haul off from the breeding grounds in large bands or pods to sleep and play together. It is during this podding period that they sooner or later come in contact with the water and learn to swim.

NOVASTOSHNAH (1890).

[Its condition and appearance July, 1890.]

As this great rookery was the object of my chief admiration in 1872, now it, in 1890, again becomes the main idea of my concern—not admiration to-day, but my chief pity, for this breeding ground has suffered a startling loss of life during the last eight years. It presents the deepest shadow, now, to that sunshine in which I saw it eighteen years ago, as I then walked around and over it. I surveyed the ground last summer as one would locate a graveyard: not more than a suggestion of the massed life of 1872 have I been able to see within its desolate area. That ground, which I have described in 1874, as covered with hosts of amphibians, is again before me to-day with not a single herd of seals upon it—*actually green with upspringing grass and colored and flecked with varied flowers!*

The accompanying map with the tinted massing of 1872-1874, contrasted with that of 1890, speaks for itself—the great rookery of Novastoshnah is a mere wreck to-day, and the chart rudely but forcibly declares it.

Detailed analysis of the survey of Novastoshnah rookery, July 13, 1890.

[Sea margin extending from A in the southeast to B in the southwest, 11,435 feet.]

	Square feet.
A to B, 700 feet sea margin, 35 feet deep, massed.....	24,500
Sea Lion Neck harems scattered among sea lions, an estimate only.....	6,000
C to D, 300 feet sea margin, 200 feet deep, massed.....	60,000
D to E, 400 feet sea margin, 10 feet deep, massed.....	4,000
F to G, 200 feet sea margin, 35 feet deep, massed.....	7,000
G to H, 550 feet sea margin, 12 feet deep, massed.....	6,600
H to I, 400 feet sea margin, 35 feet deep, massed.....	14,000
I to J, 500 feet sea margin, 10 feet deep, massed.....	5,000
J to K, 400 feet sea margin, 35 feet deep, massed.....	14,000
K to L, 200 feet sea margin, 10 feet deep, massed.....	2,000
L to M, 700 feet sea margin, 20 feet deep, massed.....	14,000
N to O, 2,100 feet sea margin, 60 feet deep, massed.....	126,000
P to Q, 420 feet sea margin, 30 feet deep, massed.....	12,600
R to S, 425 feet sea margin, 20 feet deep, massed.....	8,500
S to T, 350 feet sea margin, 10 feet deep, massed.....	3,500
T to U, 550 feet sea margin, 30 feet deep, massed.....	16,500
U to V, 500 feet sea margin, 100 feet deep, massed.....	50,000
W to S, 225 feet sea margin, 20 feet deep, massed.....	5,500
S to X, 350 feet sea margin, 10 feet deep, massed.....	3,500
Y to Z, 710 feet sea margin, 10 feet deep, massed.....	7,100
Z to Z ² , 350 feet sea margin, 20 feet deep, massed.....	7,000
Z ² to A ² , 125 feet sea margin, 10 feet deep, massed.....	1,250
A ² to A ³ , 500 feet sea margin, 40 feet deep, massed.....	20,000
A ³ to B ¹ , 480 feet sea margin, 15 feet deep, massed.....	7,200

Total square feet..... 435,750

making ground for 217,875 seals, bulls, cows, and pups, against a total of 1,200,000 in 1872-1874.

With this enumeration of Novastoshnah we close the list at St. Paul Island, and now turn to the breeding grounds of St. George, merely mentioning the fact, as we do so, that no fur seals breed on Otter Island or Walrus Islet, which are near by. The method in vogue here during the last six or seven years of scraping the margins of the rookeries for killable seals has so harassed and broken up the compact organization of the Reef rookery, as to cause quite a hauling out of breeding seals on Seevitchie Kammen, a small islet less than 900 feet in greatest length, with an average width of less than 200 feet. This rock, as may be seen on my detailed chart of the Reef rookery, lies just south-southeast of the Reef point a few hundred yards (about 1,000 feet). It is a bad place for the location of even a small rookery, since most of its elevation is

only slightly above surf wash in moderate weather, and a storm in the summer or fall would destroy nearly every pup born upon it. It is a small crescentic splintered rock and reef bar, with a little shoulder of gray basalt in its center some 25 or 40 feet only above tide water. The "ears," or wings, which make that odd, half-moon shape of this islet, are simply ice-ground and pushed basaltic boulders, over which the surf of every storm from the southwest backing around, and to the northeast rolls and breaks completely. In 1872 the fur seal did not breed here; its instinct warned it of this danger to its offspring from sea storms. But, since then, so harassed has it been, that a few hundred families or harems have preferred to risk the chance of a quiet living there, rather than to longer submit to that hustling of those sealing gangs all along the margin of their breeding grounds on the Reef point.

I estimate that some 6,000 or 7,000 breeding seals and their young were hauled out on Seevitchie Kammen this last season of 1890.

ST. GEORGE (1873-74).

[As it appeared during the summers of 1873-74.]

St. George is now in order, and this island has only a trifling contribution for the grand total of the seal life; but, small as it is, it is of much value and interest. Certainly Pribilof, not knowing of the existence of St. Paul, was as well satisfied as if he had possessed the boundless universe when he first found it. As in the case of St. Paul Island, I have been unable to learn much here in regard to the early status of the rookeries, none of the natives having any real information. The drift of their sentiment goes to show that there never was a great assemblage of fur seals on St. George; in fact, never as many as there are to-day, insignificant as the exhibit is compared with that of St. Paul. They say that at first the sea lions owned this island, and that the Russians, becoming cognizant of the fact, made a regular business of driving off the "seevitchie" in order that the fur seals might be encouraged to land. Touching this statement, with my experience on St. Paul, where there is no conflict at all between the 8,000 or 10,000 sea lions which breed around on the outer edge of the seal rookeries there, and at Southwest Point, I can not agree to the St. George legend. I am inclined to believe, however (indeed, it is more than probable), that there were a great many more sea lions on and about St. George before it was occupied by men—a hundredfold greater, perhaps—than now: because a sea lion is an exceedingly timid, cowardly creature when it is in the proximity of man, and will always desert any resting place where it is constantly brought into contact with him.¹

¹This statement of the natives has a strong circumstantial backing by the published account of Choris, a French gentleman of leisure and amateur naturalist and artist, who landed at St. George in 1820 (July). He passed several days off and on the island. He wrote at short length in regard to the sea lion, saying "that the shores were covered with innumerable troops of sea lions. The odor which arose from them was insupportable. These animals were all the time rutting," etc., yet nowhere does he speak, in the chapter or elsewhere in his volume, of the fur seal on St. George, but incidentally remarks that over on St. Paul it is the chief animal and most abundant. (*Voyage Pittoresque au tour du Monde, des Aleoutiennes*, pp. 12, 13, Pl. XIV, 1822.)

Although this writing of Choris in regard to the subject is brief, superficial, and indefinite, yet I value the record he made, because it is *prima facie* evidence, to my mind, that had the fur seal been nearly as numerous on St. George then, as it was on St. Paul, he would have spoken of the fact, surely, inasmuch as he was searching for just such items with which to illumine his projected book of travels. The old Russian record as to the relative number of fur seals on the two islands of St. George and St. Paul is clearly and palpably as erroneous for 1820 as I found it to be in 1872-73. No intelligent steps toward ascertaining that ratio were ever taken until I made my survey.



H.Doc.175,541.

- Area and Position of the breeding Fur seals. Seasons of 1873-74.
- do. do. do. do. do. 1890.
- Hawling Grounds of 1873-74 Now abandoned and Grass grown in 1890.
- do. do. 1890.





A drawing from nature by the author

ZAPADNE HAULING GROUNDS AND ROOKERY, SAINT GEORGE ISLAND, JULY 21, 1890.

View looking south, over the rookery and Zapadne Bay, showing the area of abandoned hauling and breeding grounds as emarginated by the grasses

The scantiness of the St. George rookeries is due to the configuration of that island itself. There are five separate, well-defined rookeries on St. George, as follows:

ZAPADNIE ROOKERY (1873-74).

[Its condition and appearance July, 1874.]

Directly across the island from its north shore to Zapadnie Bay, a little over 5 miles from the village, is a point where the southern bluff walls of the island turn north and drop quickly down from their lofty elevation in a succession of heavy terraces to an expanse of rocky flat, bordered by a sea sand beach. Just between the sand beach and these terraces, however, is a stretch of about 2,000 feet of low, rocky shingle, which borders the flat country back of it, and upon which the surf breaks free and boldly. Midway between the two points is the rookery, and a small detachment of it rests on the direct slope of the bluff itself, to the southward, while in and around the rookery, falling back to some distance, the holluschickie are found.

A great many confusing statements have been made to me about this rookery—more than in regard to any other on the islands. It has been said with much positiveness that in the times of the Russian rule this was an immense rookery for St. George; or, in other words, it covered the entire ground between that low plateau to the north and the high plateau to the south, as indicated on the map; and it is also cited in proof of this that the main village of the island for many years—thirty or forty—was placed on or near the limited drifting sand-dune tracts just above the plateau, to the westward. Be the case as it may, it is certain that for a great, great many years back no such rookery has ever existed here. When seals have rested on a chosen piece of ground to breed they wear off the sharp edges of fractured basaltic boulders, and polish the breccia and cement between them so thoroughly and so finely that years and years of chiseling by frost and covering by lichens and creeping of mosses will be required to efface that record. Hence, I was able, acting on the suggestion of the natives of St. Paul, to trace out those deserted fur-seal rookeries on the shores of that island, at Maroonitch, which had, according to their account, been abandoned for over sixty years by the seals; still, at their prompting, when I searched the shore I found the old boundaries tolerably well defined. I could find nothing like them at Zapadnie.

Zapadnie rookery in July, 1873, had 600 feet of sea margin, with 60 feet of average depth, making ground for 18,000 breeding seals and their young. In 1874 I resurveyed the field, and it seemed very clear to me that there had been a slight increase, perhaps to the number of 5,000, according to the expansion of the superficial area over that of 1873.

From Zapadnie we pass to the north shore, where all the other rookeries are located, with the village at a central point between them on the immediate border of the sea; and in connection with this point it is interesting to record the fact that every year, until recently, it has been the regular habit of the natives to drive the holluschickie over the 2½ or 3 miles of rough basaltic uplands which separate the hauling ground of Zapadnie from the village; driving them to the killing grounds there in order to save the delay and trouble generally experienced in loading these skins in the open bay. The prevailing westerly and northwesterly winds during July and August make it for weeks

at a time, a marine impossibility to effect a landing at Zapadnie suitable for the safe transit of cargo to the steamer.

This 5 miles of the roughest of all rough walks that can be imagined is made by the fur seals in about fourteen to sixteen hours when driven by the Aleuts and the weather is cool and foggy. I have known one Treasury agent who, after making the trip from the village to Zapadnie, seated himself down in the barrabkie there and declared that no money would induce him to walk back the same way that day, so severe is the exercise to one not accustomed to it; but it exhibits the power of land locomotion possessed by the holluschickie.¹

ZAPADNIE ROOKERY (1890).

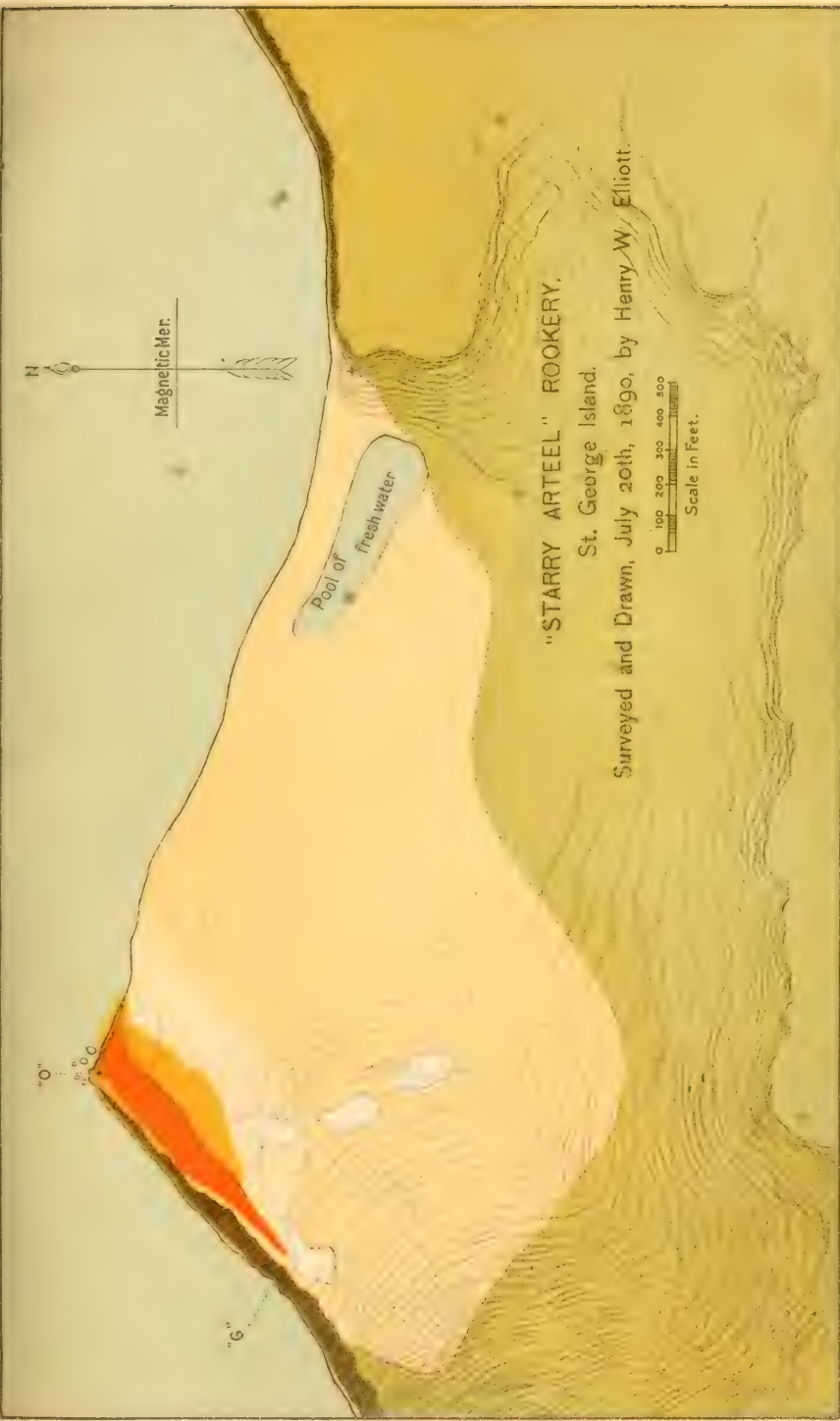
[*Its condition and appearance July, 1874.*]









The St. George Zapadnie was a very small edition of the St. Paul Zapadnie in 1872. It is still a small rookery, but relatively has held its own much better than its big namesake during the last seventeen years. I often wondered in 1873, why this little rookery way over here, and all by itself on the south shore, should be the mark of the best hauling of the holluschickie on St. George Island. I now believe that its location is the cause, since the scent and noise of the breeding seals must appeal strongly to the upward-bound bands of holluschickie, as they come en route from the Aleutian passes for St. Paul Island. The south shore of St. George would be the first land met by them, hence the largest and best drives on St. George can always be made here, although the rookery itself is, and always has been, one of the smallest.

Yet, it is the finest lay of seal landing for a breeding ground on the island, since the polished, flat basaltic shelves and cubes that are its chief topographical characteristics could easily receive ten times as many seals as I found there in 1873, or to-day, July 20, 1890. But, for some reason or other, the eligible rookery ground here has never been occupied beyond the beach belt or sea margin. The area in the rear is a superb rocky slope, nearly flat, but well drained. It never had been occupied prior to 1872-73 in so far as I can trace the record, and certainly has not been since.

Upon the accompanying map of this rookery I have also added the hauling grounds, which are all confined to this single spot on the south shore of St. George. There are none on the east shore, and there is no west shore to speak of, owing to the peculiar shape of this island. Each rookery map belonging to St. George must carry also the hauling grounds adjacent and contiguous, since these seal fields over here are on too small a scale to be shown clearly by a general map of this island unless drawn on a vastly larger scale than that which can be successfully employed for St. Paul Island.

¹The peculiarly rough character to this trail is given by the large, loose, sharp-edged basaltic boulders which are strewn thickly over all those lower plateaus that bridge the island between the bluffs at Starry Arteel and the slopes of Ahlukeyak Hill. The summits of the two broader, higher plateaus east and west, respectively, are comparatively smooth and easy to travel over; and so is the sea level flat at Zapadnie itself. On the map of St. George a number of very small ponds will be noticed; they are the fresh-water reservoirs of the island. The two largest of these are near the summit of this rough divide. The seal trail from Zapadnie to the village runs just west of them and comes out on the north shore a little to the eastward of the hauling grounds of Starry Arteel, where it forks and unites with that path. The direct line between the village and Zapadnie, though nearly a mile shorter on the chart, is equal to 5 miles more of distance by reason of its superlative rocky inequalities.



	Area and Position of the Breeding Fur Seals.	Seasons of 1873—74.
	do.	do.
	do.	do.
	do.	do.
	Hauling Grounds of the Non-breeding Seals in 1873—74.	now abandoned.
	do.	do.
	do.	do.
	do.	do.





A drawing from nature by the author.

THE NORTH SHORE OF SAINT GEORGE ISLAND, FROM STARRY ARTEEL BLUFFS, JULY 20, 1890.

View looking east over the rookery and hauling grounds of Starry Arteel; the village in the middle distance, and the North Rookery heads just this side of it.

Detailed analysis of survey of Zapadnië (St. George) rookery, July 20, 1890.

[Sea margin extending from A to B and C to D, 1,250 feet.]

Square feet.

1,250 feet sea margin, from A to B, C to D, with 20 feet average depth, massed. 25,000

making ground for 12,500 seals—bulls, cows, and pups—against a total of 18,000 in 1873-74.

It will be observed, by my tinting on this map of 1890, that in 1873 there was but 600 feet of sea margin to this rookery, but that it had the greater depth of 60 feet, which threw a third more seals into the field than is seen to day, with a sea margin twice as great, but no backing to speak of. This great scattering of these breeders along the sea margin here, instead of massing solidly as in 1873, is due to that rough driving by the sealing gangs along the rookery margins during the last six or seven years. This scraping has the decided effect of forcing the outside harems, laying farthest back from the water, down along the edges of the rookery to a spot less exposed to the hustling of the native drivers. That steadily kept up, spreads the rookery out along the water's edge. This again operates badly in still another very significant manner—the doubled extension to the sea margin of a small rookery, like Zapadnië here, brings an unduly increased number of the pups born here every year within the danger line of heavy surf in August and September, before these little fellows can swim well. Therefore, the method of driving as practiced to day, is actually forcing the exposure of a decreasing life to a fresh and an unwarranted increasing danger of destruction which every August and September gale will surely visit upon it. Such storms are not lacking: and, when they do prevail, thousands and tens of thousands of pups within the reach of their surf-washing violence, are destroyed.

STARRY ARTEEL ROOKERY¹ (1873-74).[*Its condition and appearance July, 1874.*]

This rookery is the next in order, and it is the most remarkable one on St. George, lying as it does in a bold sweep from the sea up a steeply inclined slope to a point where the bluffs bordering it seaward, are over 400 feet high, the seals being just as closely crowded at the summit of this lofty breeding plat as they are at the water's edge. The whole oblong oval on the side hill, as designated by the accompanying survey, is covered by their thickly covered forms. It is a strange sight, also, to sail under these bluffs with the boat in fair weather for a landing; and, as you walk the beach, over which the cliff wall frowns a sheer 500 feet, there, directly over your head, the craning necks and twisting forms of the restless seals, ever and anon, as you glance upward, appear as if ready to launch out and fall below, so closely and boldly do they press to the very edge of the precipice. There is a low, rocky beach to the eastward of this rookery, over which the holluschickie haul in proportionate numbers, and from which the natives make their drives:

¹ Starry Arteel, or Old Settlement: a few hundred yards to the eastward of the rookery, are the earthen ruins of one of the pioneer settlements in Pribilof's time, and which, the natives say, marks the first spot selected by the Russians for their village after the discovery of St. George in 1786.

coming from the village for this purpose, and directing the seals back in their tracks.¹

Starry Arteel has 500 feet of sea and cliff margin, with 125 feet of average depth, making ground for 30,420 breeding seals and their young.

STARRY ARTEEL ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

This rookery, I am inclined to believe, is the only one on St. George Island that really did increase in size since my work of 1873. The natives all unite in saying that it "grew larger and larger" until 1878; then it ceased to expand, and during the last four years it has gone into a rapid decline—"worse than any other here except the East rookery; nothing, really nothing, there." In 1874, when on this rookery, in reviewing my survey of 1873, I could not detect any increase or change worthy of note whatever: but, at Zapadnié I thought I found ground for a small increase there of nearly 5,000: still I was not wholly certain of it, inasmuch as the day was very foggy, and I could not entirely trust my compass bearings.

Here, as at Zapadnié, is that undue extension of sea margin for the number of seals occupying the ground, caused by that peculiar driving which has been in vogue on each island ever since the shrinking of the supply of killable seals in 1882. In 1873, this breeding ground of Starry Arteel was a compact oblong oval mass of breeding seals resting on that steep hill slope of volcanic breccia and cement which these seals seem to love so well (happy as it is as to drainage and always free from mud and dust). Then it had but 500 feet of sea and cliff margin, but had an average depth of 125 feet. Within these lines 30,000 breeding seals and young were easily located. To day it presents a straggling belt of 800 feet of cliff and sea margin, with a scant 40 feet of average depth: upon which a very liberal estimate can not place more than 16,000 animals, old and young.

¹Driving the holluschickie on St. George, owing to the relative scantiness of hauling area for those animals there, and consequent small numbers found upon these grounds at any one time, is a very arduous series of daily exercises on the part of the natives who attend to it. Glancing at the map, the marked considerable distance, over an exceedingly rough road, will be noticed between Zapadnié and the village; yet in 1872 eleven different drives across the island, of 400 to 500 seals each, were made in the short four weeks of that season.

The following table shows plainly the striking inferiority of the seal life, as to the aggregate number, even as far back as 1872 on this island, compared with that of St. Paul:

Rookeries of St. George.

	Number of drives made in 1872.	Number of seals driven.
Zapadnié (between June 14 and July 28).....	11	5,194
Starry Arteel (between June 6 and July 29).....	14	5,274
North rookery (between June 1 and July 27).....	16	4,818
Little Eastern		
Great Eastern (between June 5 and July 28).....	16	9,714

The same activity then in "sweeping" the hauling grounds of St. Paul would have brought in ten times as many seals and the labor have been vastly less; the driving at St. Paul was generally done with an eye to securing each day of the season only as many as could be well killed and skinned on that day, according as it was warm or cool.

A drawing from nature by the author.

STARRY ARTEEL ROOKERY, SAINT GEORGE ISLAND, JULY 20, 1890.

View looking west, over the desolate heaving grounds. Natives "cutting out a drive." This foreground was the site of the first settlement made by the Russians on the island, July 11, 1780; hence the name of the place, "Starry Arteel," or "Old Settlement."







- Area and Position of the Breeding Fur Seals. Seasons of 1873—74.
 do. do. do. do. do. 1890
 Breeding Grounds of the Nantuxing Seal in 1873—74; new grounds and areas given in 1890.
 do. do. do. do. 1890.

H.Doc.175.541



Doc.175,541.

Detailed analysis of the survey of Starry Arteeel rookery, July 20, 1890.

[Sea and cliff margin beginning at O and ending at G, 800 feet.]

Square feet.

800 feet sea and cliff margin between G and O, with 40 feet average depth, massed 32,000 making ground for 16,000 seals—bulls, cows, and pups—against a total in 1873 of 30,420.

This rookery, East, and Zapadnie are the only ones on St. George which have, thus far, been landed upon and raided by seal pirates. Three attempts have been made here, but only one at Zapadnie. The damage done was insignificant, since the marauders were detected before they had fairly got to work, and driven off by the natives and officers of the Government.

NORTH ROOKERY (1873-74).

[*Its condition and appearance July, 1890.*]

Next in order, and half a mile to the eastward, is this breeding ground, which sweeps for 2,750 feet along and around the sea front of a gently sloping plateau,¹ being in full sight of and close to the village. It has a superficial area occupied by 77,000 breeding seals and their young. From this rookery to the village, a distance of little more than a quarter of a mile, the holluschickie are driven, which are killed for their skins, on the common track or seal-worn trail, that not only the "bachelors" but ourselves travel over when en route to or from Starry Arteeel and Zapadnie. It is a broad, hard-packed erosion through the sphagnum and across the rocky plateaus; in fact, a regular seal road, which has been used by the drivers and victims during the last eighty or ninety years. The fashion on St. George, in this matter of driving seals, is quite different from that on St. Paul. To get their maximum quota of 25,000 annually it is necessary for the natives to visit every morning, the hauling ground of each one of these four rookeries on the north shore, and bring what they may find back with them for the day.²

¹ I should say "a gently sloping and alternating bluff plateau." Two thousand feet are directly under the abrupt faces of low cliffs, while the other 750 feet slope down gradually to the water's edge. These narrow cliff belts of breeding fur seals might be properly styled "rookery ribbons."

² The original text of the existing law for the protection of the seal islands provides that 100,000 seals which may be annually taken from them shall be proportioned by killing 75,000 on St. Paul and 25,000 on St. George. This ratio was based evidently upon the published tables of Veniaminov, which, if accurate, would clearly show that fully one-third as many seals repaired to the smaller island as to the larger one: and, until I made my surveys, 1872-1874, it was so considered by all parties interested. The fact, however, which I soon discovered, is that St. George receives only one-eighteenth of the whole aggregate of fur-seal visitation peculiar to the Pribilof Islands, St. Paul entertaining the other seventeen parts.

This amazing difference, in the light of prior knowledge and understanding, caused me, on returning to Washington in October, 1873, to lay the matter before the Treasury Department and ask that the law be so modified that, in the event of abnormally warm killing seasons, or other reasons, a smaller number might be taken from St. George with a corresponding increase at St. Paul. For unless this was done it might become at any season a matter of great hardship to secure 25,000 killable seals on St. George, in the short period allotted by law. The Treasury Department, while fully concurring in my representations, seemed to doubt its power to thus modify the law. I carried the question before Congress, January, 1874, and secured from that body an amendment of the act of July 1, 1870 (act approved March 21, 1874), which gives the Secretary of the Treasury full discretion in the matter: and fixes the hitherto inflexible ratio of killing on each island upon a sliding scale, as it were, for adjustment from season to season, upon a more intelligent understanding of the subject; and, also, this amendatory act gives the Secretary of the Treasury the power to fix the legal limit of killing annually, as the case may require.

As the law is now amended, the killing can be sensibly adjusted each season by the relative number of seals on the two islands: this total will vary decidedly on St. George according as it may be abnormally dry and warm when the period for driving the holluschickie is at hand, or other causes.

NORTH ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

I came upon this breeding ground to-day, July 19, 1890, after an absence of just sixteen years. I find the topography unchanged; the hauling grounds all grass grown, and the usual flowering plants which seem to follow (on all of these declining rookeries, the abandonment of hitherto polished rock and hard swept soil traveled over and laid upon by the seals. The breeding animals on the several areas of this rookery are in the usual form, and characteristic of those which I have described on St. Paul—the same scanty supply of old bulls; no young bulls on the rookery or outside at the water's edge; large scattered harems and every evidence of imperfect service. In all these forms, precisely as they are over on St. Paul.

Yet this, the chief rookery of St. George, which held 76,250 breeding animals and their young in 1874, has suffered a loss of only one-half of its cows and pups—but, the bulls, fully five sevenths of them are missing. This rookery was the largest on St. George in 1874. It has been so ever since, and is to day; but, large as it was, there was only one on St. Paul smaller in 1874, the Lagoon rookery; (Nah Speel we can not count). However, to-day there is still another one on St. Paul smaller, and that is Ketavie, though it was twice as large as this North rookery in 1874.

It is an admirable point of seal ground, well drained and free from muddy pools during rain storms. It is in full sight of the village, and only a short half-mile walk away.

Detailed analysis of the survey of North rookery, July 19, 1890.

[Sea margin begins at a and ends at l, 3,366 feet.]

	Square feet.
150 feet sea margin, from a to b, with 15 feet average depth, massed.....	2, 250
300 feet sea margin, from b to c, with 60 feet average depth, massed.....	18, 000
95 feet sea margin, from c to d, with no depth (a few scattered seals.)	
245 feet sea margin, from d to e, with 60 feet average depth, massed.....	20, 700
250 feet sea margin, from e to f, with 10 feet average depth, massed.....	2, 500
186 feet sea margin, from f to g, with 12 feet average depth, massed.....	2, 232
220 feet sea margin, from g to h, with 60 feet average depth, massed.....	13, 200
240 feet sea margin, from h to i, with 12 feet average depth, massed.....	2, 880
280 feet sea margin, from i to j, with 12 feet average depth, massed.....	3, 360
1,300 feet sea margin, from j to l, with 10 feet average depth, massed.....	13, 000

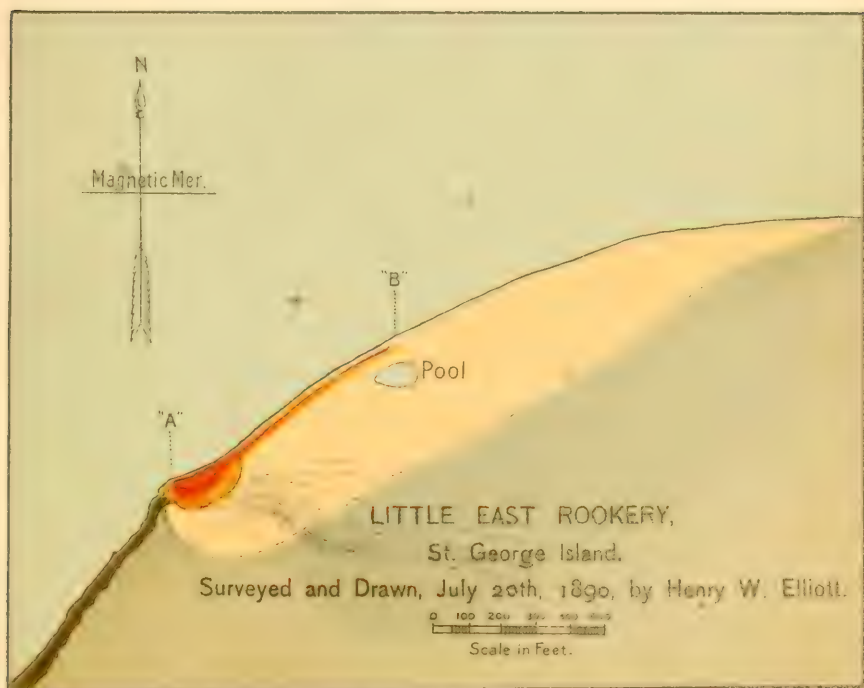
Total square feet..... 77, 122

making ground for 38,561 seals—bulls, cows, and pups—against a total of 76,250 in 1873-74.

LITTLE EASTERN ROOKERY¹ (1873-74).[*Its condition and appearance July, 1874.*]

From the village to the eastward about half a mile again, is a little eastern rookery, which lies on a low, bluffy slope and is not a piece of ground admitting of much more expansion. It has superficial area for the reception of nearly 13,000 breeding seals and their young.

¹The site of this breeding ground, and that of the marine slope of the killing grounds to the east of the village on this island, is where sea lions held exclusive possession prior to their driving off by the Russians, so the natives affirm. The only place on St. George now, where the *Eumetopias* breeds, is that one indicated on the general chart between Garden Cove and Tolstoi Mees.



- Area and Position of the Breeding Fur-seals, Seasons of 1873-74. HDoc.175,54 1.
 do. do. do. do. do. 1890.
 Abandoned Hauling Grounds of 1873-74. Now Grass grown in 1890.
 and no Seals hauled here outside of the Rookery line in 1890.





LOOKING DOWN UPON THE EAST ROOKERY, SAINT GEORGE ISLAND.
Viewed from the cliff slope above the sea lions, July 20, 1890.

A drawing from nature by the author.

LITTLE EASTERN ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

This was not much of a rookery in 1873-74, and although it has fallen away in accord with the general diminution of the seal life on these islands, yet it has held its own proportionately much better than many others. The most striking evidence of desolation is the grassing solidly over, rank and luxuriant, of the hauling grounds in its rear and to the eastward, which were so well polished off by the restless flippers of young male seals in 1873-74. Then these hauling grounds were not driven from much; the seals were practically undisturbed, and when a drive was made the seals were always merged into the larger drive from the Great Eastern.

Detailed analysis of the survey of Little Eastern rookery July 20, 1890.

[Sea margin beginning at A and ending at B, 800 feet.]

Square feet.

800 feet sea margin, from A to B, with 12 feet average depth, massed..... 9,600

Making ground for 4,800 seals—bulls, cows, and pups—against a total of 13,000 in 1873-74.

THE GREAT EASTERN (1873-74).

[*Its condition and appearance July, 1874.*]

This is the fifth, and last rookery that we find on St. George. It is an imitation, in miniature, of Tolstoi on St. Paul, with the exception of there being no parade ground in the rear of any character whatever. It is from the summit of the cliffs, overlooking the narrow ribbon of breeding seals right under them, that I have been able to study the movements of the fur seal in the water to my heart's content; for, out and under the water, the rocks to a considerable distance are covered with a whitish algoid growth that renders the dark bodies of the swimming seals and sea lions as conspicuous as is the image thrown by a magic lantern of a silhouette on a screen prepared for its reception.¹ The low, rocky flats around the pool to the westward and northwest of the rookery seemed to be filled up with a muddy alluvial wash that the seals do not favor, hence nothing but holluschickie range round about them.

¹The algoid vegetation of the marine shores of these islands is one that adds a peculiar charm and beauty to their treeless, sunless coasts. Every kelp bed that floats raft-like in Bering Sea, or is anchored to its rocky reefs, is fairly alive with minute sea shrimps, tiny crabs, and little shells, which cling to its masses of interwoven fronds or dart in ceaseless motion through, yet within, its interstices. It is my firm belief that no better base of operations can be found for studying marine invertebrata than is the post of St. Paul or St. George. The pelagic and the littoral forms are simply abundant beyond all estimation within bounds of reason. The phosphorescence of the waters of Bering Sea surpasses in continued brilliant illumination anything that I have seen in southern and equatorial oceans. The crests of the long unbroken line of breakers on Lukannon Beach looked to me, one night in August, like so many flashings of lightning between Tolstoi Mees and Lukannon Head, as the billows successively rolled in and broke. The seals swimming under the water here on St. George and beneath the Black Bluffs streaked their rapid course like comets in the sky, and every time their dark heads popped above the surface of the sea they were marked by a blaze of scintillant light.

THE GREAT EASTERN ROOKERY (1890).

[*Its condition and appearance July, 1890.*]

In 1873-74, this breeding ground ranked third in the list of five that were found on the island of St. George. To-day, it seems to have been the heaviest loser. It has literally dropped down to a mere skeleton of its form in my early survey. That extended rocky flat from which the rookery ground proper gently rises on the hill slope, was one of the most attractive hauling grounds for the holluschickie on St. George, sixteen years ago; now, its surface is covered with a most luxuriant turf—it looks like a Kentucky blue-grass meadow!

I observed here in 1873-74 that a good many sea lions hauled out on the beach curve, right under the rookery bluffs. These animals are very much more numerous now, than then: not less than 500 of them being lazily extended just above surf-wash here as I made my survey (July 20, 1890), their huge yellow bodies hauled out like Mississippi River steamboats on the levee at St. Louis.

Detailed analysis of the survey of Great Eastern rookery, July 20, 1890.

[Sea margin beginning at e and ending at f, 1,230 feet; sea margin beginning at b and ending at a 2,040 feet.]

	Square feet.
2,040 feet sea margin, a to b, with a straggling average depth of 5 feet (a very liberal estimate)	10,000
200 feet sea margin, f to g, with 30 feet average depth, massed	6,000
1,000 feet sea margin, g to e, with a straggling average depth too thin for calculation, allowed	2,000
Total square feet	18,000

making ground for 9,000 seals—bulls, cows, and pups—against a total of 25,250 in 1873-74.

I think that this rookery presents the most eloquent illustration of that ruin and demoralization wrought by the present order of scraping the breeding lines on all the rookeries in getting the daily “drives” of killable seals. It presents itself in this plain manner: In 1873 there was only 900 feet of rookery sea margin here; 200 feet of this total was a solid massing of breeding seals, from the water upon the hillside, as shown by the 1874 tint on the accompanying map. It was 200 feet deep and contained 20,000 of the 25,000 seals, all told, that then existed at this point. To-day there is 3,275 feet of rookery sea margin here: a straggling, ragged belt, not even a full harem’s width or depth, except under that side-hill expansion between *f* and *g*, where there is instead of the 200 feet of massing cited above, only 30 feet of average depth.

Thus it becomes entirely plain, upon the least study of this subject, that the present order of raking and dinning, by which the holluschickie are started out from the shelter of these breeding grounds also starts the outlying cows and bulls and hustles them off and down to the water’s edge. This, repeated day after day, has created that long extension of over 3,000 feet to my sea margin of 1873-74 on this rookery, while the seals themselves are barely one-third the number that they were at first record.

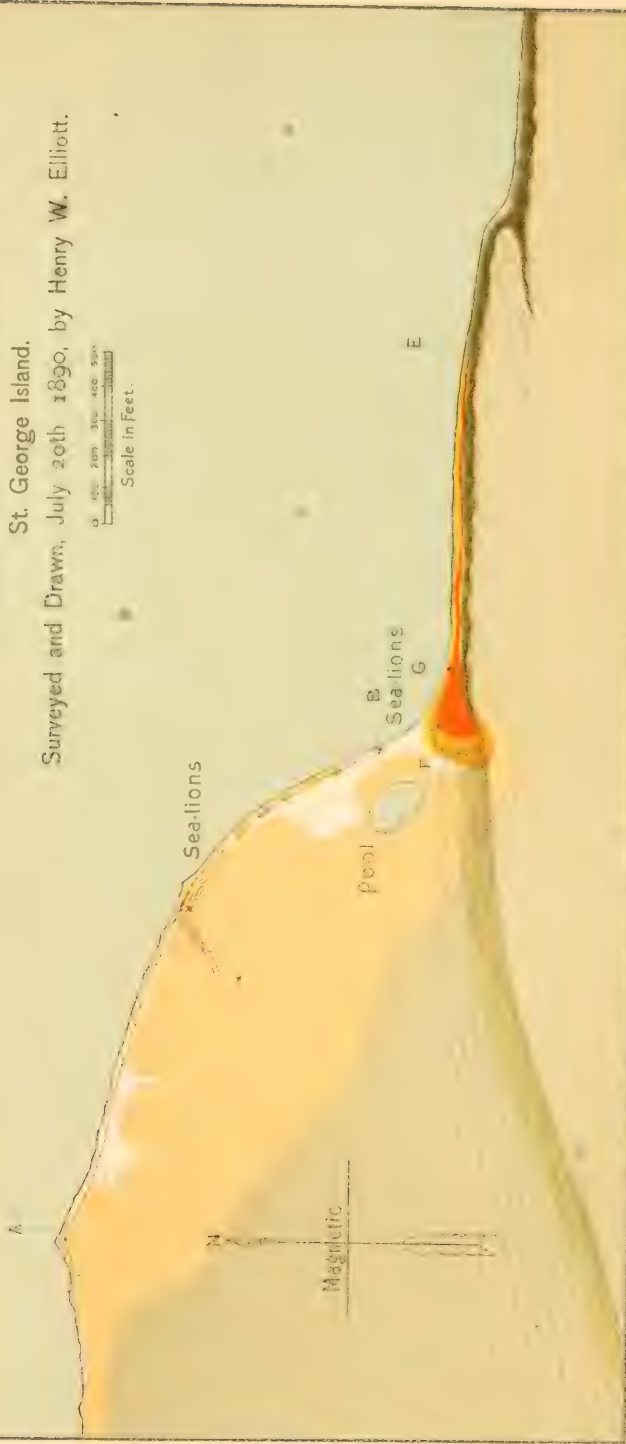
RECAPITULATION OF THE ESTIMATES OF NUMBERS OF SEALS.

Below is a brief recapitulation of those figures made from my surveys of the area and position of the breeding grounds of St. Paul Island between the 10th and 18th of July, 1872: confirmed and revised to that date in 1874; on St. George Island, July 12 to 15, 1873: confirmed and revised to that date in 1874. Opposed to these tables are my figures made July 10 to 16, 1890, on St. Paul Island, and July 19 and 20, 1890, on St. George.

GREAT EASTERN ROOKERY,

St. George Island.

Surveyed and Drawn, July 20th 1890, by Henry W. Elliott.



Area and Position of the Breeding Ponds, Seasons of 1973-74.

do. do.

49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

p. 175.541

Breeding grounds of the fur seal on St. Paul Island, July 10-18, 1872-1874.

Breeding grounds of the fur seal on St. Paul Island, July 10-16, 1890.

Rookery.	Seals, male, fe- male, and young.	Rookery.	Seals, male, fe- male, and young.
Reef rookery has 4,016 feet of sea margin, with 150 feet of average depth, making ground for.....	301,000	Reef rookery has 4,300 feet of sea margin, with 65½ feet average depth, making ground for.....	140,500
Garbotch rookery has 3,660 feet of sea margin, with 100 feet of average depth, making ground for.....	183,000	Garbotch rookery has 2,400 feet of sea margin, with 70½ feet average depth, making ground for.....	84,802
Lagoon rookery has 750 feet of sea margin, with 100 feet of average depth, making ground for.....	37,000	Lagoon rookery has 1,500 feet of sea margin, with 12 feet average depth, making ground for.....	9,000
Nah Speel rookery has 400 feet of sea margin, with 40 feet of average depth, making ground for.....	8,000	Nah Speel (has disappeared).	
Lukannon rookery has 2,270 feet of sea margin, with 150 feet of average depth, making ground for.....	170,000	Lukannon rookery has 2,050 feet of sea margin, with 60½ feet average depth, making ground for.....	72,500
Keetavie rookery has 2,200 feet of sea margin, with 150 feet of average depth, making ground for.....	165,000	Keetavie rookery has 1,700 feet of sea margin, with 34 feet average depth, making ground for.....	28,000
Tolstoi rookery has 3,000 feet of sea margin, with 150 feet of average depth, making ground for.....	225,000	Tolstoi rookery has 2,800 feet of sea margin, with 44½ feet average depth, making ground for.....	62,400
Zapadnie rookery has 5,880 feet of sea margin, with 150 feet of average depth, making ground for.....	441,000	Zapadnie rookery has 7,200 feet of sea margin, with 33½ feet average depth, making ground for.....	121,200
Polavina rookery has 4,060 feet of sea margin, with 150 feet of average depth, making ground for.....	300,000	Polavina rookery has 2,255 feet of sea margin, with 126½ feet average depth, making ground for.....	142,250
Novostoshnah or Northeast Point has 15,840 feet of sea margin, with 150 feet of average depth, making ground for.....	1,200,000	Novostoshnah or Northeast Point has 11,435 feet of sea margin, with 37½ feet of average depth, making ground for.....	217,875
A grand total of breeding seals and young for St. Paul Island in 1874 of.....	3,030,000	A grand total of breeding seals and young for St. Paul Island in 1890 of.....	878,532

Breeding grounds of the fur seal on St. George Island, July 12-15, 1873-74.

Breeding grounds of the fur seal on St. George Island, July 19-20, 1890.

Rookery.	Seals, male, fe- male, and young.	Rookery.	Seals, male, fe- male, and young.
Zapadnie rookery has 600 feet of sea margin, with 60 feet of average depth, making ground for.....	18,000	Zapadnie rookery has 11,250 feet of sea margin, with 20 feet average depth, making ground for.....	12,250
Starry Arteel rookery has 500 feet of sea margin, with 125 feet of average depth, making ground for.....	30,420	Starry Arteel rookery has 800 feet of sea margin, with 40 feet average depth, making ground for.....	16,000
North rookery has 750 feet of sea margin, with 150 feet of average depth, and 2,000 feet of sea margin, with 25 feet of average depth; making ground in all for.....	77,000	North rookery has 2,066 feet of sea margin, with 31 feet average depth, and 1,300 feet of sea margin, with 10 feet of average depth, making ground for.....	38,561
Little Eastern rookery has 750 feet of sea margin, with 40 feet of average depth, making ground for.....	13,000	Little Eastern rookery has 800 feet of sea margin, with 12 feet average depth, making ground for.....	4,800
Great Eastern rookery has 500 feet of sea margin, with 60 feet of average depth, making ground for.....	25,000	Great Eastern rookery has 200 feet of sea margin, with 30 feet average depth, 2,040 feet of sea margin, with 5 feet average depth, making ground for.....	9,000
A grand total of the seal life for St. George Island breeding seals and young of.....	163,420	A grand total of the seal life for St. George Island breeding seals and young of.....	80,861
Grand total for St. Paul Island breeding seals and young of.....	3,030,000	Grand total for St. Paul Island breeding seals and young of.....	878,532
Grand sum total for the Pribilof Islands (seasons of 1872-1874) breeding seals and young.....	3,193,420	Grand sum total for the Pribilof Islands (season of 1890) breeding seals and young.....	959,393

The foregoing figures, presented step by step as they were made, declare the fact that in 1890 there are in round numbers, only one-third the number of breeding seals and young on the Pribilof rookeries which existed in 1872-1874.

Following my figures, published in 1874, I made this detailed explanation of my understanding of the question as to number and condition. It is perfectly applicable to the present order of affairs:

The figures above thus show a grand total of 3,193,420 breeding seals and their young. This enormous aggregate is entirely exclusive of the great numbers of the nonbreeding seals that, as we have pointed out, are never permitted to come up on these grounds which have been surveyed and epitomized by the table just exhibited. That class of seals—the holluschickie, in general terms—all males, and those to which the killing is confined, come up on the land and sea beaches between the rookeries in immense straggling droves, going to and from the sea at irregular intervals from the beginning to the closing of the entire season. The method of the holluschickie on these hauling grounds is not systematic; it is not distinct, like the manner and law prescribed and obeyed by the breeding seals, which fill up those rookery grounds to the certain points as surveyed and keep these points intact for a week or ten days at a time during the height of every season in July and August; but, to the contrary, upon the hauling grounds to-day an immense drove of 100,000 will be seen before you at English Bay, sweeping hither and surging thither over the polished surface which they have worn with their restless flippers, tracing and retracing their tireless marches. To-morrow, if a heavy rain has fallen in the meantime, or it has changed to an unusually warm, dry day, you will scarcely find 10,000 there or here where you saw legions yesterday. Consequently the amount of ground occupied by the holluschickie is vastly in excess of what they would require did they conform to the same law of distribution observed by the breeding seals, and this ground is therefore wholly untenable for any such definite basis and satisfactory conclusion as is that which I have surveyed on the rookeries. Hence, in giving an estimate of the aggregate number of holluschickie, or nonbreeding seals, on the Pribilof Islands, embracing, as it does, all the males under 6 and 7 years of age and all the yearling females, it must necessarily be a simple opinion of mine founded upon nothing better than my individual judgment. This is my conclusion:

The nonbreeding seals seem nearly equal in number to that of the adult breeding seals; but without putting them down at a figure quite so high I may safely say that the sum total of 1,500,000, in round numbers, is a fair enumeration and quite within bounds of fact. This makes the grand sum total of the fur-seal life on the Pribilof Islands over 4,700,000.

My estimate, as above cited, of 1,500,000 nonbreeding seals (i. e., all males under 7 years and the yearlings of both sexes) as existing and hauling on the Pribilof Islands during the seasons of 1872-1874 was a very conservative one—*far more conservative and less liberal than the one I am about to make for the number of holluschickie and yearlings which have survived and appear in 1890, upon these hauling grounds of the seal islands of Alaska*: and this calculation appears with detail in the following section (*Section II*) of this report. Briefly stated here, *it is an extremely liberal estimate of mine when I admit the existence to-day (July 31, 1890) upon these islands of 80,000 holluschickie and "polseucatchie," i. e., male fur seals from 1 year up to 6 years old!*

Naturally enough, when summing up my work of 1872-1874, the thought arose as to the probable future of those wonderful exhibitions of massed animal life which I saw before me then, upon the Pribilof rookeries. As to the subject of their increasing, I said—

I am free to say that it is not within the power of human management to promote this end to the slightest appreciable degree over its present extent and condition as it stands in the state of nature heretofore described. It can not fail to be evident, from my detailed narration of the habits and life of the fur seal on these islands during so large a part of every year, that could man have the same supervision and control over this animal during the whole season which he has at his command while they visit the land, he might cause them to multiply and increase, as he would so many cattle, to an indefinite number—only limited by time and the means of feeding them. But the case in question, unfortunately, is one where the fur seal is taken, by demands for food, at least six months out of every year, far beyond the reach or

even cognizance of any man, where it is all this time exposed to many known powerful and destructive natural enemies, and probably many others equally so unknown, which prey upon it and, in accordance with that well-recognized law of nature, keeps this seal life at a certain number—at a figure which has been reached for ages past and will continue to be in the future, as far as they now are, their present maximum limit of increase, namely, between 4,000,000 and 5,000,000 seals, in round numbers. This law holds good everywhere throughout the animal kingdom, regulating and preserving the equilibrium of life in the state of nature. Did it not hold good, these seal islands and all Bering Sea would have been literally covered and have swarmed like the *Meduse* of the waters long before the Russians discovered them. But, according to the silent testimony of the rookeries which have been abandoned by the seals, and the noisy, emphatic assurance of those now occupied, there were no more seals when first seen here by human eyes in 1786 and 1787 than there are now in 1881, as far as all evidence goes.

From my calculations previously given, it will be seen that 1,000,000 pups or young seals, in round numbers, are born upon these islands of the Pribilof group every year; of this number, one-half are males. These 500,000 young males, before they leave the islands for sea, during October and November, and when they are between 5 and 6 months old, fat and hardy, have suffered but a trifling loss in numbers, say 1 per cent, while on and about the islands of their birth, surrounding which and upon which they have no enemies whatever to speak of; but, after they get well down to the Pacific, spread out over an immense area of watery highways in quest of piscatorial food, they form the most helpless of their kind to resist or elude the murderous teeth and carnivorous attacks of basking sharks and killer whales. By these agencies, during their absence from the islands until their reappearance in the following year, and in July, they are so perceptibly diminished in number that I do not think, fairly considered, more than one-half of the legion which left the ground of their birth in October come up the next July to these favorite landing places; that is, only 250,000 of them return out of the 500,000 born the year previous. The same statement, in every respect, applies to the going and the coming of the 500,000 female pups, which are identical in size, shape, and behavior.

As yearlings, however, these 250,000 survivors of last year's birth have become strong, lithe, and active swimmers, and when they again leave the hauling grounds as before, in the fall, they are fully as able as are the older class to take care of themselves, and when they reappear next year, at least 225,000 of them safely return in the second season after birth. From this on, I believe that they live out their natural lives of 15 to 20 years each, the death rate now caused by the visitation of marine enemies affecting them, in the aggregate, but slightly. And, again, the same will hold good touching the females, the average natural life of which, however, I take to be only 9 or 10 years each.

Out of these 225,000 young males we are required to save only one-fifteenth of their number to pass over to the breeding grounds and meet there the 225,000 young females. In other words, the polygamous habit of this animal is such that, by its own volition, I do not think that more than one male annually out of fifteen born is needed on the breeding grounds in the future. But in my calculations, to be within the margin and to make sure that I save 2-year old males enough every season, I will more than double this proportion and set aside every fifth one of the young males in question; that will leave 180,000 seals in good condition that can be safely killed every year without the slightest injury to the perpetuation of the stock itself forever in all its original integrity.¹

¹ When regarding the subject in 1872-73 of how many surplus young males could be wisely taken from the Pribilof stock, I satisfied myself that more than 100,000 could be drawn upon annually for their skins, and hence was impressed with the idea that the business might be safely developed to a greater maximum. Since then, however, I have been giving attention to the other side of the question, which involves the market for skins and the practical working of any sliding scale of increased killing, such as I then recommended. A careful review of the whole matter modified my original idea and caused me to think that, all things considered, it is better to "let well enough alone." Although it would be a most interesting commercial experiment to develop the yield of the Pribilof Islands to their full capacity, yet, in view of the anomalous and curious features of the case, it is wiser to be satisfied with the assured guarantee of perpetuation in all original integrity, which the experience of the last ten years gives us on the present basis of 100,000, than to risk it by possibly doubling the revenue therefrom. Therefore, I am not now in favor of my earlier proposition of gradually increasing the killing until the maximum number of surplus "holluschickie" should be ascertained.

In the above showing I have put the very extreme estimate upon the loss sustained at sea by the pup seals too large I am morally certain: but, in attempting to draw this line safely, I wish to place the matter in the very worst light in which it can

Upon this same basis of estimation,¹ less than 300,000 pups were born upon the Pribilof rookeries last year, 1889, but not more than 70,000 to 80,000 of them returned to these islands in 1890, *since their natural enemies are as numerous and as active as ever in the sea*, while the surplus store of seal life upon which these enemies drew in 1872, as they draw now, has been rapidly diminishing during the last six years. Touching this question in 1874, I said then:

These fur seals of the Pribilof group, after leaving the islands in the autumn and early winter, do not visit land again until the time of their return in the following spring and early summer to these same rookery and hauling grounds, unless they touch, as they are navigating their lengthened journey back, at the Russian Copper and Bering islands, 700 miles to the westward of the Pribilof group. They leave the islands by independent squads, each one looking out for itself. Apparently all turn by common consent to the south, disappearing toward the horizon, and are soon lost in the vast expanse below, where they spread themselves over the entire North Pacific as far south as the forty-eighth and even the forty-seventh parallels of north latitude. Over the immense area between Japan and Oregon doubtless many extensive submarine fishing shoals and banks are known to them. At least it is definitely understood that Bering Sea does not contain them long when they depart from the breeding rookeries and the hauling grounds therein. While it is carried in mind that they sleep and rest in the water with soundness and with the greatest comfort on its surface, and that even when around the land during the summer they frequently put off from the beaches to take a bath and a quiet snooze just beyond the surf, we can readily agree that it is no inconvenience whatever—the reproductive functions having been discharged and their coats renewed—for them to stay the balance of the time in their most congenial element, the briny deep.

That these animals are preyed upon extensively by killer whales² (*Orca gladiator*), and by sharks,³ and probably other submarine foes now unknown, is at once evident, for were they not held in check by some such cause they would, as they exist to-day on St. Paul, quickly multiply, by arithmetical progression, to so great an extent that the island, nay Bering Sea itself, could not contain them. The present annual killing of 100,000 out of a yearly total of over 1,000,000 males does not, in an appreciable degree, diminish the seal life or interfere in the slightest with its regu-

be put, and to give the seals the full benefit of every doubt. Surely, I have clearly presented the case, and certainly no one will question the premises after they have studied the habit and disposition of the rookeries. Hence it is a positive and tenable statement that no danger of the slightest appreciable degree of injury to the interests of the Government on the seal islands of Alaska exists as long as the present law protecting it and the management executing it continues.

¹ Right at this point, in 1890, I realize the paramount importance of keeping a much larger surplus male life in reserve than I did in 1874. I see its necessity now: by reducing the male life to the figures which I thought were safe in 1874, I would only prevent that constant fighting among the sires on the rookery, *which is absolutely necessary for the best perpetuation of the race*—that struggle of the fittest to survive as the progenitors of the herd. Man can not interfere here with these wildest of wild animals: animals which he can not feed or control in the slightest degree, he can not breed as he can cattle, sheep, or hogs.

² *Orca gladiator*.—While revolving this particular line of inquiry in my mind when on the ground and among the seals, I involuntarily looked constantly for some sign of disturbance in the sea which would indicate the presence of an enemy; and, save seeing a few examples of the *Orca*, I never detected anything. But the killer whale is common here: it is patent to the most casual eye, because it is the habit of this ferocious cetacean to swim so closely at the surface as to show its peculiar sharp, dorsal fin high above the water. Possibly a very superficial observer could and would confound the long, trenchant fluke of the *Orca* with the stubby node upon the spine of the humpback whale, which that animal exhibits only when it is about to dive. Humpbacks feed around the islands, but not commonly—they are the exception. They do not, however, molest the seals in any manner whatever; and little squads of these pinnipeds seem to delight themselves by swimming in endless circles around and under the huge bodies of those whales, frequently leaping out and entirely over the cetacean's back! as witnessed on one occasion by myself and the crew of the *Reliance*, off the coast of Kodiak, June, 1874.

³ *Somniosus microcephalus*.—Some of these sharks are of very large size, and when caught by the Indians of the northwest coast, basking or asleep on the surface of the sea, they will, if transfixcd by the natives' harpoons, take a whole fleet of canoes in tow and run swiftly with them several hours before exhaustion enables the

far, sure perpetuation on the breeding grounds every year. We may, therefore, properly look upon this aggregate of 4,000,000, or 5,000,000 of fur seals, as we see them every season on these Pribilof Islands, as the maximum limit of increase assigned to them by natural law. The great equilibrium which nature holds in life upon this earth must be sustained at St. Paul as well as elsewhere.

Think of the enormous food consumption of these rookeries and hauling grounds when 5,000,000 seals ranged the Pacific Ocean and Bering Sea! I said in 1881—[Mon. Seal Islands of Alaska.]

What an immense quantity of finny prey must pass down their voracious throats as every year rolls by. A creature so full of life, strung with nerves, and muscles like bands of steel, can not live on air or absorb it from the sea. Their food is fish to the practical exclusion of all other diet. I have never seen them touch, or disturb with the intention of touching it, one solitary example in the flocks of water fowl which rest upon the surface of the water all about the islands. I was especially careful in noting this, because it seemed to me that the canine armature of their mouths must suggest flesh for food at times as well as fish; but fish we know they eat. Whole windrows of the heads of cod and wolf fishes, bitten off by these animals at the nape, were washed up on the south shore of St. George during a gale in the summer of 1873. This pelagic decapitation evidently marked the progress and the appetite of a band of fur seals to the windward of the island, as they passed into and through a stray school of these fishes.

How many pounds per diem is required by an adult seal, and taken by it when feeding, is not certain in my mind. Judging from the appetite, however, of kindred animals, such as sea lions fed in confinement at Woodward's Gardens, San Francisco, I can safely say that 40 pounds for a full grown fur seal is a fair allowance, with at least 10 or 12 pounds per diem to every adult female, and not much less, if any, to the rapidly growing pups and young holluschickie. Therefore, this great body of 4,000,000 and 5,000,000 of hearty, active animals which we know on the seal islands, must consume an enormous amount of such food every year. They can not average less than 10 pounds of fish each per diem, which gives the consumption, as exhibited by their appetite, of over 6,000,000 tons of fish every year. What wonder then that nature should do something to hold these active fishermen in check.¹

savages to finally dispatch them. A Hudson Bay trader, William Manson (at Fort Alexander, in 1865), told me that his father had killed one in the smooth waters of Millbank Sound which measured 24 feet in length, and its liver alone yielded 36 gallons of oil. The *Somniosus* lays motionless for long intervals in calm waters of the North Pacific, just under and at the surface, with its dorsal fin clearly exposed above. What havoc such a carnivorous fish would be likely to effect in a "pod" of young fur seals can be better imagined than described.

The following sharks probably prey upon the fur seals and fur-seal pups in the North Pacific Ocean:

- Heptranchias maculatus*, Shovel-nosed Shark.
- Hexanchus corinus*, Cow Shark.
- *Cetorhinus maximus*, Ground Shark or Basking Shark
- Carcharias glaucus*, Blue Shark.
- Somniosus microcephalus*, Sleeper or Basking Shark.

These species range from Monterey Bay northward; the range of *Cetorhinus* and *Somniosus* is to the Arctic seas, the others do not (?) go so far north.

I should think that the *Cetorhinus* is the most destructive. If the pups get down well within the range of the blue shark, it would also be one of their worst enemies.

¹ When, however, the fish retire from spawning here, there, and everywhere over these shallows of Alaska and the Northwest Coast, along by the end of September to 1st of November every year, I believe that the young fur seal, in following them into the depths of the great Pacific, must have a really arduous struggle for existence, unless it knows of fishing banks, unknown to us. The yearlings, however, and all above that age, are endowed with sufficient muscular energy to dive rapidly in deep soundings and to fish with undoubted success. The pup, however, when it goes to sea, 5 or 6 months old, is not lithe and sinewy like the yearling; it is podgy and fat, a comparative clumsy swimmer, and does not develop, I believe, into a good fisherman until it has become pretty well starved after leaving the Pribilofs. I must not be understood as saying that fish alone constitute the diet of the Pribilof pinnipeds. I know that they feed to a limited extent upon crustaceans and upon the squid (*Loligo*), also eating tender algoid sprouts. I believe that the pup seals live for the first five or six months at sea largely, if not wholly, upon crustaceans and squids. They are not agile enough, in my opinion, to fish successfully in any great degree when they first depart from the rookeries.

During the winter solstice—between the lapse of the autumnal and the verging of the vernal equinoxes—in order to get this enormous food supply, the fur seals are necessarily obliged to disperse over a very large area of fishing ground, ranging throughout the North Pacific, 5,000 miles across between Japan and the Straits of Fuca. In feeding they are brought to the southward all this time, and as they go they come more and more in contact with those natural enemies peculiar to the sea of these southern latitudes, which are almost strangers and are really unknown to the waters of Bering Sea; for I did not observe, with the exception of ten or twelve perhaps, certainly no more, killer whales, a single marine disturbance or molestation during the three seasons which I passed upon the islands that could be regarded in the slightest degree inimical to the peace and life of the *Pinnipedia*; and thus, from my observation, I am led to believe that it is not until they descend well to the south of the Aleutian Islands and in the North Pacific, that they meet with sharks to any extent, and are diminished except by the butchery of killer whales in Bering Sea.

The young fur seals going out to sea for the first time, and following in the wake of their elders, are the clumsy members of the family. When they go to sleep on the surface of the water they rest much sounder than the others; and their alert and wary nature, which is handsomely developed ere they are two seasons old, is in its infancy. Hence I believe that vast numbers of them are easily captured by marine foes as they are stupidly sleeping or awkwardly fishing.

With reference to the amount of ground covered by the seals when first discovered by the Russians, I have examined every foot of the shore line of both islands where the bones and polished rocks, etc., might be lying on any deserted areas. Since then, after carefully surveying the new ground now occupied by the seals and comparing this area with that which they have deserted, I feel justified in stating that for the last twelve or fifteen years at least the fur seals on these islands have not diminished, nor have they increased as a body to any noteworthy degree; and throughout this time the breeding grounds have not been disturbed except at that brief but tumultuous interregnum during 1868, and they have been living since in a perfectly quiet and natural condition.

CAN THE NUMBER BE INCREASED?

What can be done to promote their increase? We can not cause a greater number of females to be born every year than are born now; we do not touch or disturb these females as they grow up and live, and we never will if the law and present management is continued. We save double—we save more than enough males to serve; nothing more can be done by human agency. It is beyond our power to protect them from their deadly marine enemies as they wander into the boundless ocean searching for food.

In view, therefore, of all these facts I have no hesitation in saying—quite confidently—that under the present rules and regulations governing the sealing interests on these islands the increase or diminution of the seal life thereon will amount to nothing in the future; that the seals will exist, as they do exist, in all time to come at about the same number and condition recorded in this monograph. To test this theory of mine I here, in the record of my surveys of the rookeries, have put stakes down which will answer upon those breeding grounds as a correct guide as to their present as well as to their future condition from year to year.

The theory has been well tested. I was right in then assuming that no increase could be noted over the record of 1872-1874; but I was wrong in then believing that no injury to the regular supply of young male life necessary for the full support of the breeding grounds would follow from the driving and killing of the holluschickie as conducted; also, the deadly work of the pelagic sealer was not suggested in any serious sense sixteen years ago, and I did not take it into calculation. I have given, in my letter of introduction, the reason why this driving of the holluschickie has been so destructive to young male seal life—a reason which I could not grasp in 1872-1874, since it required time and experience to develop the fact beyond argument and contradiction. It is easy to see now in the clear light of the record, that had there been no sealing at sea, and had every young male seal been taken in every drive made from the outset in 1871, over 1 year old and under 5, the annual quota of 100,000 would have been easily filled without injury whatsoever, in less than twenty working days from the 14th of every June, with only one-quarter of the driving necessary under the past and present order of culling out the largest seals for slaughter and

releasing the smaller ones from each drive, when on the killing grounds. In other words, taking all the young male seals as driven, over 1 year old and under 5 years, would have saved on an average for every year, the lives of at least 50,000 to 60,000 holluschickie! while those spared from the club, annually during the last twenty years, were rendered worthless for rookery service from the immediate or subsequent effect of severe overland driving whenever they lived through it.

It is a fact now plainly established that hereafter, should seals ever be driven *for tax and shipment of their skins*, again on these islands, *no culling of the "drives" should be permitted*. The market for the skins will promptly adjust itself to the several ages, sizes, and their value. The rookeries, however, will not, can not, endure any further adjustment of *that fixed scale of size on the killing grounds*. *If it is resumed, then the extermination of the fur seal is right at hand, insofar as its life on the Pribilof Islands is concerned, even if all pelagic sealing is prohibited!*¹

I searched for danger to these interests on every side in 1872-1874. I could detect no disease whatever, even of the most trifling character, in the vast herds: and no legend even, much less statement, of any sickness among the seals was extant.²

But the importance of making an accurate record of the areas and position of those great breeding grounds as I found them in 1872-1874 was not lost on me; it impressed me deeply; and these surveys were made then of each rookery. In order that the officers of the Government who came after me, charged with the care and protection of these interests, might understand the feasibility of annually surveying these breeding grounds without disturbing the animals in the least degree, I said then:

During the first week of inspection of some of those earliest arrivals the "see-catchie," which I have described, will frequently take to the water when approached; but these runaways quickly return. By the end of May, however, the same seals will hardly move to the right or left when you attempt to pass through them. Then, two weeks before the females begin to come in and quickly after their arrival, the organization of the fur-seal rookery is rendered entirely indifferent to man's presence on visits of quiet inspection, or to anything else save their own kind, and so continues during the rest of the season.

I have called attention to the singular fact that the breeding seals upon the rookeries and hauling grounds are not affected by the smell of blood or carrion arising from the killing fields or the stench of blubber fires which burn in the native villages. This trait is conclusively illustrated by the attitude of those two rookeries near the village of St. Paul: for, the breeding ground on this spit, at the head of the lagoon, is not more than 40 yards from the great killing grounds to the eastward, being separated from those spots of slaughter and the 70,000 or 80,000 rotting carcasses thereon by a slough not more than ten yards wide. These seals can smell the blood and carcasses upon this field from the time they land in the spring until they leave in the autumn, while the general southerly winds waft to them the odor and sounds of the village of St. Paul, not over 200 rods south of them, and above them in plain sight.

¹See suggestions for Revised Regulations. Appendix, p. 228.

²The thought of what a deadly epidemic would effect among these vast congregations of *Pinnipedia* was one that was constant in my mind when on the ground and among them. I have found in the British Annals (Fleming's), on page 17, an extract from the notes of Dr. Trail: "In 1833 I inquired for my old acquaintances, the seals of the Hole of Papa Westray, and was informed that about four years before they had totally deserted the island, and had only within the last few months begun to reappear. * * * About fifty years ago multitudes of their carcasses were cast ashore in every bay in the north of Scotland, Orkney, and Shetland, and numbers were found at sea in a sickly state." This note of Trail is the only record which I can find of a fatal epidemic among the seals. It is not reasonable to suppose that the Pribilof rookeries have never suffered from distempers in the past, or are not to in the future, simply because no occasion seems to have arisen during the comparatively brief period of their human domination.

All this has no effect upon the seals; they know that they are not disturbed, and the rookery, the natives declare, has been slightly but steadily increasing. Therefore, with regard to surveying and taking those boundaries assumed by the breeding seals every year at that point of high tide and greatest expansion which they assume between the 8th and 15th of July, it is an entirely practicable and simple task. You can go everywhere on the skirts of the rookeries, almost within reaching distance, and they will greet you with quiet, inoffensive notice, and permit close, unbroken observation when it is subdued and undemonstrative, paying very little attention to your approach.

YEARLY CHANGES IN THE ROOKERIES.

I believe the agents of the Government there are going to notice, every year, little changes here and there in the area and distribution of the rookeries. For instance, one of these breeding grounds will not be quite as large this year as it was last, while another one opposite will be found somewhat larger and expanded over the record which it made last season. In 1871 it was my pleasure and my profit to retrace all these rookeries of St. George and St. Paul with my field notes of 1872 in my hand, making careful comparisons of their relative size as recorded then and now. To show this peculiarity of enlarging a little here and diminishing a little there, so characteristic of the breeding grounds, I reproduce the following memoranda of 1874:

NORTHEAST POINT, *July 18, 1874.*

Contrast on St. Paul between 1872 and 1874: Quite a strip of ground near Webster's house has been deserted this season, but a small expansion is observed on Hutchinsous Hill. The rest of the ground is as mapped in 1872, with no noteworthy increase in any direction. The condition of the animals and their young excellent. Small irregularities in the massing of the families, due to the heavy rain this morning. Sea lions about the same; none, however, on the west shore of the point.

The aggregate of life on this great rookery is, therefore, about the same as in 1872. The holluschickie, or killable seals, hauling as well and as numerous as before. The proportions of the different ages among them of 2, 3, and 4 year olds pretty well represented.

POLAVINA, *July 18, 1874.*

Stands as it did in 1872. Breeding and hauling grounds in excellent condition; the latter, on Polavina, are changing from the uplands down upon Polavina sand beach, trending for 3 miles toward Northeast Point. The numbers of the holluschickie on this ground of Polavina, where they have not been disturbed for some five years, to mention in the way of taking, do not seem to be any greater than they are on the hauling grounds adjacent to Northeast Point and the village, from which they are driven almost every day during this season of killing. I notice also this remarkable characteristic of the holluschickie: No matter how cleanly the natives may drive the seals off of a given piece of hauling ground this morning, if the weather is favorable to-morrow will see it covered again just as thickly; and thus they drive in this manner from Zoltot sands almost every day during the killing season, generally finding on the succeeding morning more or as many seals as they drove off the previous dawn. This seems to indicate that the holluschickie recognize no particular point as favored over another at the island when they land, which is evidently in obedience to a general desire of coming ashore at such a suitable place as promises no crowding and no fighting.

LUKANNON AND KEETAVIE, *July 19, 1874.*

Not materially changed in any respect from its condition at this time in 1872.

GARBOTCH, *July 19, 1874.*

Just the same. Condition excellent.

REEF, *July 19, 1874.*

A slight contraction on the south sea margin of this ground compensated for by fresh expansion under the bluffs on the northwest side, not noteworthy in either instance. Condition excellent.

NAH SPEEL, *July 20, 1874.*

A diminution of one-half at least. Very few here this year. It is no place for a rookery. Not a pistol shot from the natives' houses, and all of the natives' children fooling over the bluffs.

LAGOON, *July 20, 1874.*

No noteworthy change; if any, a trifling increase. Condition good. Animals clean and lively.

TOLSTOI, *July 21, 1874.*

No perceptible change in this rookery from its good shape of 1872. The condition excellent.

ZAPADNIE, *July 22, 1874.*

A remarkable extension or increase I note here of 2,000 feet of shore line, with an average depth of 50 feet of breeding ground, which has been built on to Upper Zapadnie, stretching out toward Tolstoi. The upper rookery proper has not altered its bearings or proportions. The sand beach belt between it and Lower Zapadnie is not occupied by breeding seals, and a fair track for the holluschickie, 500 feet wide, left clear, over which they have traveled quite extensively this season. Some 20,000 to 25,000 of them at least lying out around the old salt house to-day. Lower Zapadnie has lost in a noteworthy degree about an average of 20 feet of its general depth, which, however, is more than compensated for by the swarming on the upper rookery. A small beginning had been made for a rookery on the shore just southwest from Zapadnie Lake in 1872, but this year it has been substantially abandoned.

CONTRAST ON ST. GEORGE BETWEEN 1873 AND 1874.

An epitome of my notes for St. George gives, as to this season of 1874, the following data for comparison with that of 1873:

ZAPADNIE, *July 8, 1874.*

This rookery shows a slight increase upon the figures of last year, about 5,000. Fine condition.

STARRY ARTEEL, *July 6, 1874.*

No noteworthy change from last year.

NORTH ROOKERY, *July 6, 1874.*

No essential change from last year. Condition very good.

LITTLE EASTERN, *July 6, 1874.*

A slight diminution of some 2,000 or so. Condition excellent.

EASTERN ROOKERY, *July 7, 1874.*

A small increase over last year of about 3,000; only trilling, however. The aggregate seal life here similar to that of last season, with the certainty of at least a small increase. The unusually early season this year brought the rookery "seecatchie" on the ground very much in advance of the general time; they landed as early as the 10th of April, while the arrival of the cows was as late as usual, corresponding to my observations during the past seasons.

The general condition of the animals of all classes on St. George is most excellent; they are sleek, fat, and free from any disease.

In this way it is plain that, practically, the exact condition of these animals can be noted every season, and should a diminution be observed, due to any cause, known or unknown, the killing can be promptly regulated or stopped to any required quota.

Had such a supervision of these rookeries and hauling grounds been maintained in the manner and method above pointed out, as essential to a correct understanding of their condition, *as it is, then, in 1882 the killing would have been "promptly regulated or stopped," as it should have been;* and the erroneous idea of an increase of seals since my record of 1872-1874, would not have been entertained for a moment, unless dishonestly stimulated.

THE ARRIVAL OF THE BREEDING SEALS (1872-1890).

In view of the changed condition of the rookeries of St. Paul and St. George last summer, I took great care in noting the daily arrival of the breeding seals and methods, contrasting these notes with those taken eighteen years earlier. I can truthfully assert that they come as they came in 1872: in the same time, same manner, and in every respect comport themselves as they did, save in two characteristics—the old bulls are disproportionately scant in number, exceedingly so, and the young male life fit to take their places is virtually extinct. I reviewed in 1874 my studies of this topic in the following language:

I found it an exceedingly difficult matter to satisfy myself as to a fair general average number of cows to each bull on the rookery; but, after protracted study, I think it will be nearly correct when I assign to each male a general ratio of from

15 to 20 females at the stations nearest the water, and for those back in order from that line to the rear, 'from 5 to 12; but there are so many exceptional cases, so many instances where 45 and 50 females are all under the charge of 1 male; and then again where there are 2 or 3 females only, that this question was and is not entirely satisfactory in its settlement to my mind.

Near Ketavie Point, and just above it to the north, is an old washout of the basalt by the surf, which has chiseled, as it were, from the foundation of the island a lava table with a single roadway or land passage to it. Upon the summit of this foot-stool, I counted 45 cows, all under the charge of an old veteran. He had them penned up on this table rock by taking his stand at the gate, as it were, through which they passed up and passed down—a Turkish brute typified.

Thus in 1872, when the rookeries were carefully observed with reference to this question, I found *a general average of fifteen cows to each bull* (without taking into consideration the virgin females); in 1890 *a general average of forty to fifty cows to each old bull* (no young ones about) is the result of careful investigation, and single harems, in which *I have counted over one hundred cows*, each in the flimsy charge of an old and weary "sea-catch!" Such harems were not uncommon. This unnatural disproportion of the sexes on these breeding grounds to day, renders the service there, of reproduction, quite lifeless: almost impotent; wholly so in a large aggregate of cases.

Therefore, with full knowledge of this state of the Pribilof rookeries, I say that their condition will be still worse next year—will be no better for the next four or five years—indeed, it will not, can not, mend until fresh male blood matures and comes upon these fields. These animals must grow up from the pups of last year, and those born this season (the others are either dead, or worthless if alive), and it will take at least seven years for them to do so, and prove their power to check and hold these demoralized and diminished herds from their downward grade of the present hour.

The young male seals on these islands *must have a rest*: a full and earnest opportunity to mature and go unshorn of their virility, upon these dwindling rookeries. If they are not at once spared and substantially undisturbed for at least six or seven years to come, with a prompt suppression of pelagic sealing on the other hand, then it is idle to talk of or plan for the restoration and preservation of the seal life on our islands in Bering Sea.

Then, when it shall be proper and safe to again kill surplus male fur seals for their skins, as a matter of revenue and profit, *an entirely new set of regulations as to the manner of driving and killing must be enforced*;² and these regulations must be, will be, quite different from those which have been the law up there during the last twenty-one years. That experience, however, so dearly bought since 1882, now gives us full knowledge of the disease, and understanding for its cure.

¹ At the rear of all these rookeries there is invariably a large number of able-bodied males which have come late, but wait patiently, yet in vain, for families, most of them having had to fight as desperately for the privilege of being there as any of their more fortunately located neighbors, who are nearer the water, and in succession from there to where they are themselves; but the cows do not like to be in any outside position. They can not be coaxed out where they are not in close company with their female mates and masses. They lie most quietly and contentedly in the largest masses, and cover the surface of the ground so thickly that there is hardly moving or turning room until the females cease to come from the sea. The inaction on the part of the males in the rear, during the breeding season, only serves to qualify them to move into the places which are necessarily vacated by those males that are, in the meantime, obliged to leave from virile exhaustion or incipient wounds. All the surplus able-bodied males that have not been successful in effecting a landing on the rookeries, can not, at any one time during the season, be seen here on this rear line. Only a portion of their number are in sight; the others are either loafing at sea, adjacent, or are hauled out in morose squads between the rookeries on the beaches.

² See p. 228 *postea*. Appendix; text of Revised Regulations.

In 1874 I made the following analysis of a detailed description of the seals on the breeding grounds:

REVIEW OF STATEMENTS CONCERNING LIFE IN THE ROOKERIES.

To recapitulate and sum up the system and regular method of life and reproduction on these rookeries of St. Paul and St. George, as the seals seem to have arranged it, I shall say that—

First. The earliest bulls land in a negligent, indolent way, at the opening of the season, soon after the rocks at the water's edge are free from ice, frozen snow, etc. This is, as a rule, about the 1st to the 5th of every May. They land from the beginning to the end of the season in perfect confidence and without fear; they are very fat, and will weigh on an average 500 pounds each. Some stay at the water's edge, some go to the tier back of them again, and so on until the whole rookery is mapped out by them weeks in advance of the arrival of the first female.

Second. That by the 10th or 12th of June all the male stations on the rookeries have been mapped out and fought for, and held in waiting by the "seecatchie." These males are, as a rule, bulls rarely ever under 6 years of age; most of them over that age, being sometimes three, and occasionally doubtless four, times as old.

Third. That the cows make their first appearance, as a class, on or after the 12th or 15th of June in very small numbers; but rapidly after the 23d and 25th of this month every year they begin to flock up in such numbers as to fill the harems very perceptibly, and by the 8th or 10th of July they have all come, as a rule—a few stragglers excepted. The average weight of the female now will not be much more than 80 to 90 pounds each.

Fourth. That the breeding season is at its height from the 10th to the 15th of July every year, and that it subsides entirely at the end of this month and early in August; also, that its method and system are confined entirely to the land, never effected in the sea.

Fifth. That the females bear their first young when they are 3 years old, and that the period of gestation is nearly twelve months, lacking a few days only of that lapse of time.

Sixth. That the females bear a single pup each, and that this is born soon after landing. No exception to this rule has ever been witnessed or recorded.

Seventh. That the "seecatchie" which have held the harems from the beginning to the end of the season leave for the water in a desultory and straggling manner at its close, greatly emaciated, and do not return, if they do at all, until six or seven weeks have elapsed, when the regular, systematic distribution of the families over the rookeries is at an end for this season. A general medley of young males are now free, which come out of the water and wander all over these rookeries, together with many old males which have not been on seraglio duty, and great numbers of females. An immense majority over all others present are pups, since only about 25 per cent of the mother seals are out of the water now at any one time.

Eighth. That the rookeries lose their compactness and definite boundaries of true breeding limit and expansion by the 25th to the 28th of July every year. Then, after this date, the pups begin to haul back to the right and left in small squads at first; but as the season goes on, by the 18th of August, they depart without reference to their mothers, and when thus scattered, the males, females, and young swarm over more than three and four times the area occupied by them when breeding and born on the rookeries. The system of family arrangement and uniform compactness of the breeding classes breaks up at this date.

Ninth. That by the 8th or 10th of August the pups born nearest the water first begin to learn to swim, and that by the 15th or 20th of September they are all familiar, more or less, with the exercise.

Tenth. That by the middle of September the rookeries are entirely broken up. Confused, straggling bands of females are seen among the bachelors, pups, and small squads of old males, crossing and recrossing the ground in an aimless, listless manner. The season now is over.

Eleventh. That many of the seals do not leave these grounds of St. Paul and St. George before the end of December, and some remain even as late as the 12th of January; but that by the end of October and the beginning of November every year all the male seals of mature age—5 and 6 years and upward—have left the islands. The younger males go with the others. Many of the pups still range about the islands, but are not hauled to any great extent on the beaches or the flats. They seem to prefer the rocky shore margin and to lie as high up as they can get on such bluffy rookeries as Tolstoi and the reef. By the end of this month (November) they are, as a rule, all gone.

In precisely the same time and the same manner as above stated in 1872, did the breeding seals arrive and behave on the Pribilof rookeries this season of 1890. I know this by daily verification up to the 11th of

August. *The seals are not "coming later,"*¹ nor are they changed in any respect except as to sadly diminished numbers and the practical extinction of effective male life on the breeding grounds. Illustrative of the extreme regularity of the arrival of these animals every season throughout a period of twenty consecutive years, I present the following statement of the annual dates of first arrivals of fur seals for each year from 1870 to 1890, inclusive. These dates are taken from the Treasury agent's journal on the seal islands.

First appearance of bulls and cows on the rookeries of St. Paul and St. George islands, Pribilof group, Alaska.

Year.	Island of St. Paul.		Island of St. George.	
	Bulls.	Cows.	Bulls.	Cows.
1870.....	May 2	June 4-6	May 1	.....
1871.....	May 4	June 4, 5	May 4	.....
1872.....	May 5	June 6-8	May 6	June 4, 5
1873.....	Apr. 24	June 6, 7	May 12	June 6, 7
1874.....	Apr. 23	June 4-6	Apr. 30	June 6-8
1875.....	Apr. 28	June 4-8	May 5	June 3-8
1876.....	May 3	June 6, 8	Apr. 28	June 4-6
1877.....	May 17	June 4-6	May 17	Do.
1878.....	May 6	June 6-8	May 9	Do.
1879.....	Apr. 29	June 4-6	May 10	Do.
1880.....	Apr. 30	June 6-8	May 11	June 3-6
1881.....	May 5	June 2-6	May 6	Do.
1882.....	Apr. 26	June 4-8	.....do.....	June 3-7
1883.....	May 6	June 5, 6	May 7	June 4-6
1884.....	Apr. 30	June 4-8	May 3	June 4-8
1885.....	Apr. 27	June 6-8	Apr. 29	June 4-6
1886.....	Apr. 16	June 4-6	May 1	June 3-4
1887.....	May 1	June 3-7	May 7	June 4-6
1888.....	.....do.....	June 4-6	May 8	June 3-6
1889.....	May 3	.....do.....	May 5	June 4-6
1890.....	Apr. 28	June 6-8	Apr. 26	Do.

The first drives for food each year on St. Paul Island, have been made with great regularity between the 15th and 21st of May throughout the time specified above; and also on St. George Island. The bulls all arrived prior to and by the 1st of June; the cows all arrived prior to and by the 20th of July of every year.

AS TO THE CAUSE FOR THIS DECREASE ON THE PRIBILOV ROOKERIES.

This point of inquiry does not require elaboration. The reason is plain; the cause fairly asserts itself—*overdriving since 1882, on land, together with the spear, bullet, and buckshot of the pelagic sealer since 1886.* The overdriving has chiefly robbed the rookeries of that supply of fresh male life absolutely required every season and the water pirate has destroyed the females with unborn and born young.² It is needless to

¹ This silly cry was dinned into my ears by the white employees of the lessees, incessantly, from the middle of June, 1890, until the end of July, 1890; these men, however, knew better; but that was the way, in their estimation, to hide the truth from ignorant Treasury agents: one man only, of these white agents of the lessees, was manly enough to admit the fallacy of this argument when I faced him with the ruin of the herd. His name is Daniel Webster, a veteran New London, Conn., sealer, who first began his operations on these islands in 1868, and has been here ever since, with a slight intermission, when he passed one sealing season on the Russian seal islands, in Bering Sea. He had, also, prior to this, experience as a "raider" on Robbens Reef, Ochotsk Sea.

² Out of 77 fur-seal skins seized on the *Mattie T. Dyer* (schooner), only 6 of them came from animals without pups (i. e., 71 were pregnant females). They (the sealers) had little black pup skins fresh cut out from the womb; womb moist; 17 fresh female fur-seal skins, and every one of these bodies had a pup in them. These men declared that they got only 1 out of every 5 that they shot, that is, for the 5 hit they only got 1 of them. The number of shots fired they did not count; but of the 5 seals that they undertook to get that they hit they usually got but 1 of them.—(United States Collector Emmons, Oonalaska, August 14, 1890.)

speculate as to other causes, for the two cited above are full and ample reasons for the existing diminution. Were they not so patent, we might speculate, as I did in 1872-1874, in the following tone:

THOUGHTS UPON THE POSSIBLE MOVEMENTS OF THE FUR SEALS IN THE FUTURE.

As these animals live and breed upon the Pribilof Islands, the foregoing studies of their habits declare certain natural conditions of landing ground and climate to be necessary for their existence and perpetuation. From my surveys made upon the islands to the north—St. Matthew and St. Lawrence—together with the scientific and corroborating testimony of those who have visited all of the mainland coast of Alaska and the islands contiguous, including the peninsula and the great Aleutian archipelago, I have no hesitation in stating that the fur seal can not breed, or rest for that matter, on any other land than that now resorted to, which lies within our boundary lines; the natural obstacles are insuperable.¹

Therefore, so far as our possessions extend, we have in the Pribilof group the only eligible land to which the fur seal can repair for breeding: and, on which at St. Paul Island alone, there is still room enough of unoccupied rookery ground for the accommodation of twice as many seals as we find there to-day. But we must not forget a very important prospect, for we know that to the westward only 700 miles, and within the jurisdiction of Russia, are two other seal islands—one very large—on which the fur seal regularly breeds also; and though from the meager testimony in my possession, compared with St. Paul, the fur-seal life upon them is small, still, if that land within the pale of the Czar's dominion be as suitable for the reception of the rookeries as is that of St. Paul, then what guaranty have we that the seal life on Copper and Bering islands at some future time may not be greatly augmented by a corresponding diminution of our own, with no other than natural causes operating? Certainly, if the ground on either Bering or Copper Island, in the Commander group, is as well suited for the wants of the breeding fur seal as is that exhibited by the Pribilof Islands, then I say confidently that we may at any time note a diminution here and find a corresponding augmentation there, for I have clearly shown in my chapter on the habits of these animals that they are not so particularly attached to the respective places of their birth, but that they rather land with an instinctive appreciation of the fitness of that ground as a whole.

NEED OF MORE DEFINITE KNOWLEDGE CONCERNING THE RUSSIAN SEAL ISLANDS.²

If we, however, possess all the best-suited ground, then we can count upon retaining the seal life as we now have it by a vast majority; and in no other way: for, it is not unlikely that some season may occur when an immense number of the fur seals which have lived during the last four or five years on the Pribilof Islands should be deflected from their usual feeding range at sea by the shifting of schools of fish and other abnormal causes, which would bring them around quite close to the Asiatic seal grounds in the spring, and the scent from those rookeries would act as a powerful stimulant and attraction for them to land there, where the conditions for their breeding may be just as favorable as they desire. Such being the case, this diminution, therefore, which we would notice on the Pribilof group might be the great increase observed at the Commander Islands, and not due to any mismanagement on the part of the men in charge of these interests. Thus it appears to me necessary that definite knowledge concerning the Commander Islands and the Kuriles should be gathered.

If we find, however, that the character of this Russian seal land is restricted to narrow beach margins under bluffs, as at St. George, then we shall know that a great body of seals will never attempt to land there when they could not do so without suffering and in violation of their laws during the breeding season. Therefore, with this correct understanding to start on, we can then feel alarmed with good reason should we ever observe any diminution to a noteworthy degree on our seal islands of Bering Sea.

POSSIBLE DEFLECTION OF SEALS IN FEEDING.³

I do not call attention to this subject with the slightest idea in my mind, as I write, of any such contingency arising even for an indefinite time to come; but still I am sensible of the fact that it is possible for it to occur any season. But, the seals undoubtedly feed on their pelagic fields in systematic routine of travel from the time they leave the Pribilof Islands until that of their return; therefore, in all probability, unless the fish upon which they are nourished, suddenly become scarce in our waters and soundings, our seals will not change their base as matters now progress; yet, it is possible for the finny shoals and schools to be so deflected from their migration to and from their spawning beds as to carry this seal life with it, as I have hinted

¹In Section VIII of this report will be found the best arrangement of notes bearing upon this subject which I have been able to make.

²See p. 211, Appendix.

³See p. 212, Appendix.

above. Thus it can not be superfluous to call up this question, so that it shall be prominent in discussion and suggestion for future thought.

NEED OF CAREFUL YEARLY EXAMINATION.

In the meantime the movements of the seals upon the great breeding rookeries of St. Paul and those of St. George should be faithfully noted and recorded every year, and as time goes on this record will place the topic of their increase or diminution beyond all theory or cavil.

Since writing and publishing the above I have learned that the Russian seal islands have been steadily increasing their rookery areas from 1870 up to 1879-80; and, since that time, the yield of the hauling grounds over there was trebled in 1889 over the catch of 1876. Whether or not these Slavonian rookeries will stand this driving so as to annually get 62,000 young males hereafter, as was done last year (1889), or fail to do so in a few years to come, I can at this distance only conjecture. But, *our seals have not gone over there; they have been destroyed in plain view on this side!*

The following salient points of change can be clearly stated, in so far as the Pribilof rookeries exist this season of 1890, and contrasted with their condition of 1872:

Status of 1872.

(1) On the rookery ground the bulls were all by June 1,—and

(2) Located on this ground then no farther than 6 to 10 feet apart.

(3) They were very vigorous, very active, incessantly fighting with one another.

(4) Thousands upon tens of thousands of half bulls, or polseacatchie, which were then trying to land upon the breeding belt of sea margin, provoking and sustaining a constant fight and turmoil, but being almost invariably whipped off by the old bulls.

(5) Cows began to arrive on the breeding grounds by June 4 to 6, and all arrived in good form by July 10.

(6) They were located on the breeding ground in compact solid masses, uniformly distributed over a given area of ground, no matter how large or how small.

(7) A general average of 15 cows to 1 bull was the best understanding. Once in awhile, a peculiar configuration of the breeding ground enabled 1 bull the chance to pen up 35 or 45 cows, but it was seldom witnessed, as a rule.

(8) Cows all promptly and efficiently served when in heat. Never witnessed a failure.

Status of 1890.

(1) On the rookery ground the bulls were all by June 1,—and

(2) Located on this ground from 15 to 150 feet apart.

(3) They are inert and somnolent. I have not seen a single fight between the bulls yet.

(4) Not a single half bull, or polseacatchie, attempting to land and serve the cows. Not a single one have I been able to observe. In fact, there are none left. Those that exist now have been ruined as breeders, from the effects of overdriving several thousand of these broken-spirited bulls, old and young, are now loafing on the outskirts of these rookeries and hauling out with the small holluschickie on the sand and rock margins.

(5) Cows began to arrive on the breeding grounds by June 4 to 6. All arrived, as a rule, by July 10.

(6) They are located on the breeding grounds in scattered harems, solidly here,—there one or two harems, then a dozen or so families scattered over twice and thrice as much ground as they should occupy if massed as in 1872-1874. The scanty supply of, the wide stations and feebleness of the bulls is undoubtedly the reason for this striking change in their distribution as they ordered it in 1872-1874.

(7) A general average of 45 or 50 cows to 1 bull is the best estimate that can be made to-day. There are so many harems of 60 and 75 cows in charge of 1 bull to each, and frequently single harems of 100 to 120 cows, that it makes the general average of 45 or 50 very conservative.

(8) Many of the cows not served even when persistently solicitous early in the season. Vigorous, willing service seems to be the exception, not the rule. Bulls not one-tenth as numerous as in 1872, and only one-third of the cows here as a rule, and no new young male blood mature and virile enough to take its station on these rookeries.

In regard to the probable number of breeding bulls on each rookery in 1872-1874, I made the following note and tabulation:

ST. GEORGE ISLAND, *North Rookery, July 12, 1873.*

I think now that this is a safe and equitable basis for beginning my calculation. * * * Every 100 feet of sea margin will have 10 bulls on it, and for every 100 feet of depth from the margin we will have a bull for every 7 feet of that depth. * * * They fight so desperately on the sea margin that the average is widest there, uniformly, then it will average up right back, through, 7 by 10 feet, very honestly. * * *

Basis for estimation of bulls in 1872-1874, with an average of 15 cows, 15 pups, and 5 subile females to each bull.

The reef has 4,016 feet sea margin with 1 bull on every 10 feet of sea margin, 150 feet average depth, and 1 bull for every 7 feet of average depth, which gives 402 bulls by 204 bulls, or about 8,642 bulls. On this basis and method of calculation, therefore, the rookeries have approximately as follows:

	Bulls.
St. Paul Island:	
Reef.....	8,642
Garbotch.....	5,207
Lagoon.....	580
Lukannon.....	4,880
Keetavie.....	4,730
Tolstoi.....	6,450
Zapadnie, upper wing, 2,814; lower wing, 9,700.....	12,514
Polavina.....	8,600
Novashoshnah.....	34,006
Total bulls for St. Paul.....	85,609
St. George Island:	
Zapadnie.....	599
Starry Artel.....	975
North.....	2,302
Little Eastern.....	112
Great Eastern.....	714
Total bulls for St. George.....	4,702

Or, in round numbers, a grand total of 90,000 breeding bulls on the rookeries of both islands.

The wide and scanty hauling of the bulls on these breeding grounds for this season of 1890, together with the strange massing of immense harems around single bulls, while the others immediately around have no part in the service, render such a tabulation on the basis of 1872-1874, as above given, quite out of the question as a measure of just contrast. I therefore will not attempt it, since the comparison can not be well made in this respect. [My figures for 1890, give 11,708 bulls for St. Paul; 800 for St. George.]

In concluding my observations under this head, it is, perhaps, not superfluous to anticipate and reply to the following generalizations which will naturally arise to the mind of the general reader.

It seems from the foregoing surveys, that at the close of the season of 1890, there are still existing upon the Pribilof rookeries, 959,000 seals, old and young and pups of this year's birth, or about one-third of the whole number of breeding seals and young recorded as being there in 1872-1874. How, then, can they be so near the danger of extermination, even if they are in danger of it?

The explanation is as follows:

(1) There is but 1 breeding bull now upon the rookery ground, where there were 15 in 1872; and the bulls of to-day are nearly all old, and many positively impotent.

(2) This decrease of virile male life on the breeding grounds causes the normal ratio of 15 or 20 females to a male, as in 1872-1874, now to

reach the unnatural ratio of 50 to even 100 females to an old and enfeebled male.

(3) There is no appreciable number of young males left alive to-day on these hauling or nonbreeding grounds, to take their places on the breeding grounds, which are old enough for that purpose: or will be old enough, if not disturbed by man, even if left alone for the next five years.

(4) Meanwhile the natural enemies of the fur seal are just as numerous in the sea and ocean as they ever were. The killer whale and the sharks are feeding upon them, just as they did in 1872-1874.

(5) Therefore, we have destroyed by land and by sea, that equilibrium which nature had established in 1868, on these rookeries, and we must now restore it: or, no other result can follow save that of swift extermination.

(6) That condition of 1872 being restored: then, that surplus male life *must be taken again under better regulations than those of 1870:*¹ and the *pelagic sealing must be restricted to proper limits:* this action will enable the fur markets of the world to have a regular supply for all time to come, provided that it is carried out in good time.

¹ See terms of such regulations, p. 228, Appendix.





A drawing from nature by the author.

TOLSTOI MEES.

REEF POINT

HOLLUSCHICKIE HAULING ON TOLSTOI SANDS, ENGLISH BAY, SAINT PAUL ISLAND.

This is the sight which these seals presented to the observer day and night during the seasons of 1872-1874; not even a suggestion of it was evident in 1890.

SECTION II.

THE HAULING GROUNDS OF THE FUR SEAL ON THE PRIBILOV ISLANDS OF ALASKA—THEIR AREA, POSITION, AND CONDITION IN 1872-1874 AND 1890.

THE HAULING GROUNDS OF THE FUR SEAL.

In 1872-1874 these fields of seal life on the Pribilof Islands were in themselves quite as impressive and interesting as the great rookeries then were. To day (1890) it is a difficult matter to say where a single well-defined hauling ground on either island exists of more than slight extent in superficial area—those broad acres of 1874 upon which not even a vestige of vegetable growth could live, owing to the tireless pattering of fur-seal flippers—those clean-swept fields are now mossy, grass-grown, and flecked with indigenous flowering plants clear down to the water's edge, or up to very margins of the rookery grounds, upon which a scanty remnant of that swarming host of surplus male seal life, which so astonished me in 1872, now lands! It hauls there to-day for quiet and protection—instinctively does so, as the last stand for self-preservation left for it on these islands during the past six years.

In 1872 there was a marked distinction between the "rookeries,"¹ or breeding grounds, and the "ezvairie,"² or hauling grounds; not in name, not on paper, as it literally is to-day, but in reality then, by the testimony of those grounds and the life thereon itself. I gave the following description of the Pribilof hauling grounds and of that life characteristic of them, in 1874: [*Monograph Seal Islands of Alaska: 1881, p. 43.*]

THE HAULING GROUNDS AND THEIR OCCUPANTS.

I now call the attention of the reader to another very remarkable feature in the economy of the seal life on these islands. The great herds of holluschickie,³ numbering about one-third, perhaps, of the whole aggregate of near 5,000,000 seals known to the Pribilof group, are never allowed by the "see-catchie," under the pain of frightful mutilation or death, to put their flippers on or near the rookeries.

By reference to my map it will be observed that I have located a large extent of ground, markedly so on St. Paul, as that occupied as the seals' hauling grounds. This area, in fact, represents those portions of the island upon which the holluschickie roam in their heavy squadrons, wearing off and polishing the surface of the soil, stripping every foot, which is indicated on the chart as such, of its vegetation and mosses, leaving the margin as sharply defined on the bluffly uplands and sandy flats as it is on the map itself.

The reason that so much more land is covered by the holluschickie than by the breeding seals—ten times as much, at least—is due to the fact that though not as numerous, perhaps, as the breeding seals, they are tied down to nothing, so to speak, are wholly irresponsible, and roam hither and thither as caprice and the weather may dictate. Thus they wear off and rub down a much larger area than the rookery

¹ "Rookery," an old sealer's term, derived from the swarming, noisy roosts of the rook-bird in England.

² "Ezvairie," a Russian equivalent of "hauling up;" means literally a "coming out" or "coming up." The natives call the rookeries "laying out" places or "laas-bustchie," and the hauling grounds, "ezvairie."

³ The Russian term "holluschickie" or "bachelors" is very appropriate, and is usually employed.

seals occupy. Wandering aimlessly and going back, in some instances, notably at English Bay, from one-half to a whole mile inland, not traveling in desultory files along winding, straggling paths, but sweeping in solid platoons, they obliterate every spear of grass and rub down nearly every hummock in their way.

DEFINITION OF "HOLLUSCHICKIE."

All the male seals, above 6 years of age, and under, are compelled to herd apart by themselves and away from the breeding grounds, in many cases far away, the large hauling grounds at Southwest Point being about 2 miles from the nearest rookery. This class of seals is termed "holluschickie" or the "bachelor" seals by the people, a most fitting and expressive appellation.

The seals of this great subdivision are those with which the natives on the Pribilof group are the most familiar; naturally and especially so, since they are the only ones, with the exception of a few thousand pups and occasionally an old bull or two taken late in the fall for food and skins, which are driven up to the killing grounds at the village for slaughter. The reasons for this exclusive attention to the bachelors are most cogent, and will be given hereafter when the business is discussed.

LOCATING THE HAULING GROUNDS.—PATHS THROUGH THE ROOKERIES.

Since the holluschickie are not permitted by their own kind to land on the rookeries and stop there, they have the choice of two methods of locating, one of which allows them to rest in the rear of the rookeries and the other on the free beaches. The most notable illustration of the former can be witnessed on Reef Point, where a pathway is left for their ingress and egress through a rookery—a path left by common consent, as it were, between the harems. On these trails of passage they come and go in steady files all day and all night during the season, unmolested by the jealous bulls which guard the seraglios on either side as they travel. All peace and comfort to the young seal if he minds his business and keeps straight on up or down, without stopping to nose about right or left; all woe and desolation to him, however, if he does not, for in that event he will be literally torn in bloody griping, from limb to limb, by the vigilant old "see-catchie."

Since the two and three year old holluschickie come up in small squads with the first bulls in the spring, or a few days later, such common highways as those between the rookery ground and the sea are traveled over before the arrival of the cows and get well defined. A passage for the bachelors, which I took much pleasure in observing day after day at Polavina, another at Tolstoi, and two on the reef, in 1872, were entirely closed up by the "see-catchie" and obliterated when I again searched for them in 1874. Similar passages existed, however, on several of the large rookeries of St. Paul. One of those at Tolstoi exhibits this feature very finely, for here the hauling ground extends around from English Bay, and lies up back of the Tolstoi rookery, over a flat and rolling summit, from 100 to 120 feet above the sea level. The young males and yearlings of both sexes come through and between the harems at the height of the breeding season on two of these narrow pathways, and before reaching the ground above are obliged to climb up an almost abrupt bluff, which they do by following and struggling in the water runs and washes that are worn into its face. As this is a large hauling ground on which, every favorable day during the season, 15,000 or 20,000 commonly rest, the sight of skillful seal climbing can be witnessed here at any time during that period, and the sight of such climbing as this of Tolstoi is exceedingly novel and interesting. Why, verily, they ascend over and upon places where an ordinary man might, at first sight, with great positiveness say that it was utterly impossible for him to climb.

HAULING GROUNDS ON THE BEACHES.

The other method of coming ashore, however, is the one most followed and favored. In this case they avoid the rookeries altogether and repair to the unoccupied beaches between them, and then extend themselves out all the way back from the sea, as far from the water in some cases as a quarter and even half of a mile. I stood on the Tolstoi sand dunes one afternoon, toward the middle of July, having under my eyes, in a straightforward sweep over from my feet to Zapadnié, 1,500,000 seals spread out on those hauling grounds. Of these I estimated that fully one-half at that time were pups, yearlings, and holluschickie. The rookeries across the bay, though plainly in sight, were so crowded that they looked exactly as I have seen surfaces appear upon which bees had swarmed in obedience to that din and racket made by the watchful apiarian when he desires to hive the restless honey makers.

The great majority of yearlings and holluschickie are annually hauled out and packed thickly over the sand beach and upland hauling grounds which lay between

the rookeries on St. Paul Island. At St. George there is nothing of this extensive display to be seen, for here is only a tithe of the seal life occupying St. Paul, and no opportunity whatever is afforded for an amphibious parade.

GENTLENESS OF THE SEALS.

Descend with me from this sand-dune elevation of Tolstoi, and walk into that drove of holluschickie below us. We can do it. You do not notice much confusion or dismay as we go in among them; they simply open out before us and close in behind our tracks, stirring, crowding to the right and left as we go, 12 or 20 feet away from us on each side. Look at this small flock of yearlings, some 1, others 2, and even 3 years old, which are coughing and spitting around us now, staring up at our faces in amazement as we walk ahead. They struggle a few rods out of our reach and then come together again behind us, showing no further sign of notice of ourselves. You could not walk into a drove of hogs at Chicago without exciting as much confusion and arousing an infinitely more disagreeable tumult; and as for sheep on the plains, they would stampe de far quicker. Wild animals indeed! You can now readily understand how easy it is for two or three men—early in the morning—to come where we are, turn aside from this vast herd in front of and around us 2,000 or 3,000 of the best examples, and drive them back, up, and over to the village. That is the way they get the seals. There is not any “hunting” or “chasing” or “capturing” of fur seals on these islands.

HOLLUSCHICKIE DO NOT FAST.

While the young male seals undoubtedly have the power of going for lengthy intervals without food, they, like the female seals on the breeding grounds, certainly do not maintain any long fasting periods on land. Their coming and going from the shore is frequent and irregular, largely influenced by the exact condition of the weather from day to day. For instance, three or four thick, foggy days seem to call them out from the water by hundreds of thousands upon the different hauling grounds which the reader observes recorded on my map. In some cases I have seen them lie there so close together that scarcely a foot of ground over whole acres was bare enough to be seen. Then, a clear and warmer day follows, and this seal-covered ground, before so thickly packed with animal life, will soon be almost deserted: comparatively so at least, to be filled up immediately again when favorable weather shall reappear. They must frequently eat when here, because the first yearlings and holluschickie that come in the spring, are no fatter, sleeker, or livelier than they are at the close of the season: in other words, their condition, physically, seems to be the same from the beginning to the end of their appearance here during the summer and fall. It is quite different, however, with the “see-catchie.” We know how and where it spends two to three months, because we find it on the grounds at all times, day or night, during that period.

SPORTS AND PASTIMES OF THE YOUNG BACHELORS.

A small flock of the young seals, one to three years old generally, will often stray from these hauling-ground margins, up and beyond, over on to the fresh mosses and grasses, and there sport and play one with another just as little puppy dogs do: and when weary of this gamboling, a general disposition to sleep is suddenly manifested, and they stretch themselves out and curl up in all the positions and all the postures that their flexible spines and ball-and-socket joints will permit. They seem to revel in the unwonted vegetation, and to be delighted with their own efforts in rolling down and crushing the tall stalks of the grasses and umbelliferous plants. One will lie upon its back, hold up its hind flippers and lazily wave them about, while it scratches or rather rubs its ribs with the fore hands alternately, the eyes being tightly closed during the whole performance. The sensation is evidently so luxurious that it does not wish to have any side issue draw off its blissful self-attention. Another, curled up like a cat on a rug, draws its breath, as indicated by the heaving of its flanks, quickly but regularly as though in heavy sleep. Another will lie flat upon its stomach, its hind flippers covered and concealed, while it tightly folds its fore feet back against its sides just as a fish carries its pectoral fins. And so on to no end of variety according to the ground and the fancy of the animals.

These bachelor seals are, I am sure, without exception the most restless animals in the whole brute creation which can boast of a high organization. They frolic and lope about over the grounds for hours without a moment's cessation, and their sleep after this is exceedingly short: it is usually accompanied with nervous twitchings and uneasy muscular movements. They seem to be fairly brimful and overrunning with spontaneity, to be surcharged with fervid, electric life.

Another marked feature which I have observed among the multitudes of holluschickie that have come under my personal observation and auditory, and one very

characteristic of this class, is that nothing like ill-humor appears in all of their playing together; they never growl, or bite, or show even the slightest angry feeling, but are invariably as happy, one with another, as can be imagined. This is a very singular trait; they lose it, however, with astonishing rapidity, when their ambition and strength develops and carries them, in due course of time, to the rookery.

The pups and yearlings have an especial fondness for sporting on the rocks which are just at the water's level and awash, so as to be covered and uncovered as the surf rolls in. On the bare summit of these wave-worn spots they will struggle and clamber in groups of a dozen or two at a time throughout the whole day, in endeavoring to push off that one of their number which has just been fortunate enough to secure a landing. The successor has, however, but a brief moment of exultation in victory, for the next roller that comes booming in, together with the pressure by its friends, turns the table, and the game is repeated, with another seal on top. Sometimes, as well as I could see, the same squad of holluschickie played for a whole day and night, without a moment's cessation, around such a rock as this off Nah Speel rookery; but in this observation I may be mistaken, because the seals can not be told apart.

SEALS AMONG THE BREAKERS.

The graceful unconcern with which the fur seal sports safely in, among, and under booming breakers during the prevalence of the numerous heavy gales at the islands has afforded me many consecutive hours of spell-bound attention to them: absorbed in watching their adroit evolutions within the foaming surf that seemingly every moment, would in its fierce convulsions, dash these hardy swimmers, stunned and lifeless, against the iron-bound foundations of the shore which alone checked the furious rush of the waves. Not at all. Through the wildest and most ungovernable mood of the roaring tempest and storm-tossed waters attending its transit I never failed, on creeping out and peering over the bluffs in such weather, to see squads of these perfect watermen, the most expert of all amphibians, gamboling in the seething, creamy wake of mighty rollers which constantly broke in thundertones over their alert, dodging heads. The swift succeeding seas seemed every instant to poise the seals at the very verge of death. Yet the *Callorhinus*, exulting in his skill and strength, bade defiance to their wrath and continued his diversions!

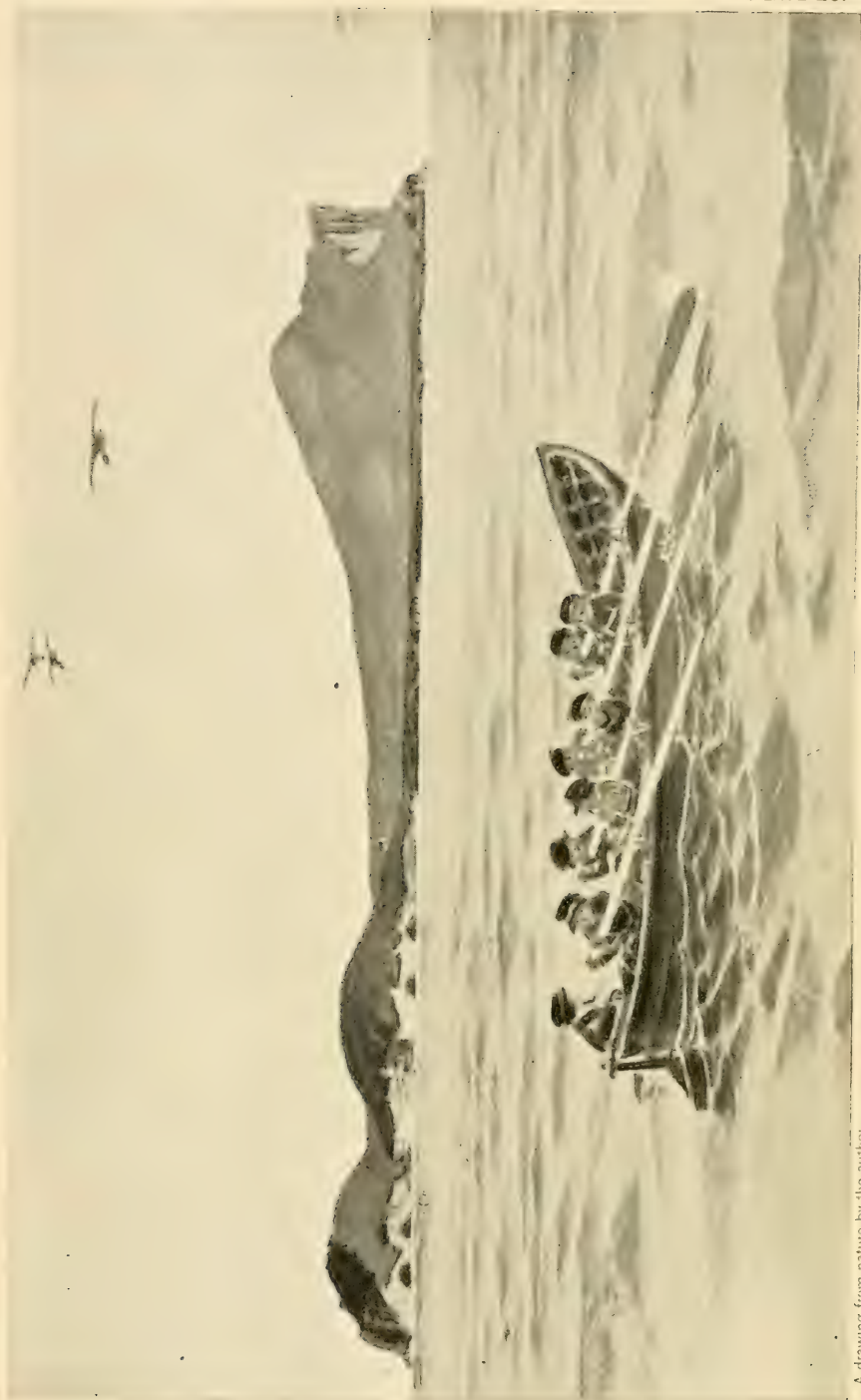
SWIMMING FEATS OF THE BACHELORS.

The holluschuckie are the champion swimmers of all the seal tribe; at least, when in the water around the islands they do nearly every fancy tumble and turn that can be executed. The grave old males and their matronly companions seldom indulge in any extravagant display as do these youngsters, jumping out of the water like so many dolphins describing beautiful elliptic curves, sheer above its surface, rising 3 and even 4 feet from the sea, with the back slightly arched, the fore flippers folded tightly against the sides and the hinder ones extended and pressed together straight out behind, plumping in head first: to reappear in the same manner, after an interval of a few seconds of submarine swimming, like the flight of a bird on their course. Sea lions and hair seals never jump in this manner.

All classes will invariably make these dolphin jumps when they are surprised or are driven into the water, curiously turning their heads while sailing in the air, between the "rises" and "plumps," to take a look at the cause of their disturbance. They all swim rapidly, with the exception of the pups, and may be said to dart under the water with the velocity of a bird on the wing. As they swim, they are invariably submerged, running along horizontally about 2 or 3 feet below the surface, guiding their course with the hind flippers as by an oar, and propelling themselves solely by the fore feet: rising to breathe at intervals, which are either very frequent, or else, so wide apart, that it is impossible to see the speeding animal when he rises a second time.

How long they can remain under water without taking a fresh breath is a problem which I had not the heart to solve by instituting a series of experiments at the island; but I am inclined to think that if the truth were known in regard to their ability of going without rising to breathe it would be considered astounding. On this point, however, I have no data worth discussing: but will say that in all their swimming which I have had a chance to study, as they passed under the water, mirrored to my eyes from the bluff above by the whitish-colored rocks below the rookery waters at Great Eastern rookery, I have not been able to satisfy myself how they used their long, flexible hind feet other than as steering media. If these posterior members have any perceptible motion it is so rapid that my eye is not quick enough to catch it; but the fore flippers, however, can be most distinctly seen as they work in feathering forward and sweeping flatly back, opposed to the water, with great rapidity and energy. They are evidently the sole propulsive power of the fur seal in the





A drawing from nature by the author.

CRATER POINT.

LANDING.

WEST END BLUFFS.

VIEW OF THE NORTH SHORE OF OTTER ISLAND, PHIBLOV GROUP, JULY 5, 1890.

Natives crossing over from Saint Paul in the "haidar."

water, as they are its main fulcrum and lever combined for progression on land. I regret that the shy nature of the hair seal never allowed me to study its swimming motions: but, it seems to be a general point of agreement among authorities on the *Phocida*, that all motion in water by them arises from that power which they exert and apply with the hind feet. So far as my observations on the hair seal go, I am inclined to agree with this opinion.

All their movements in water, whether they are traveling to some objective point or are in sport, are quick and joyous; and nothing is more suggestive of intense satisfaction and pure physical comfort than is that spectacle which we can see every August, a short distance out at sea from any rookery, where thousands of old males and females are idly rolling over in the billows side by side, rubbing and scratching with their fore and hind flippers which are here and there stuck up out of the water by their owners like the lateen sails of the Mediterranean feluccas: or, when the hind flippers are presented, like a "cat o' nine tails." They sleep in the water a great deal more than is generally supposed, showing that they do not come on land to rest—very clearly not.

The foregoing description of the hauling grounds and their occupants, or the killable seals, as they existed in 1872-1874 on the seal islands of Alaska, was very soberly drawn from the bright view which they then presented; but, moderate as the simple truth of it is, it reads like a romance when contrasted with the condition of these fields and life as it is to-day!

While the diminution of the area and the life on the breeding grounds of St. Paul is such as to show a trifle more than one-third of its extent and volume to-day compared with what existed in 1872, yet the discrepancy between the area of the hauling grounds on this island and number of occupants as presented in 1872 and again in 1890, is something positively startling—is almost unreal—but the truth easily asserts its strange reality on the accompanying map of these hauling grounds of St. Paul Island. The tint of 1872 seems an almost fabulous expanse when contrasted with the microscopic shade of 1890.

The loss is much greater here than on the rookeries, for the following reasons:

Ever since 1879-1882 the surplus young male seal life has been sensibly feeling the pressure of the overland death drive, and the club. Harder and harder became this wretched driving to get the culled quota in 1883-84. Finally, when 1886 arrived, every nook and cranny on these islands that had hitherto been visited by these seals in peace, was now daily searched out—close up, back of, and against the breeding rookeries, under every cliff wall by the sea, over to Southwest Point and to Otter Island, and even the little islet, Seevitche Kammin, under the lee of the Reef, was regularly hunted out.

Every 3-year old, every 4-year old, and every well-grown 2-year old male seal has been annually taken here, during the last two years, within a day or two at the latest, after it showed up on the beaches and in the rear of the rookeries, prior to the 26th to 31st of July!

In 1872, the killable seals were permitted to "haul up" in every sense of the word. They hauled out far inland from the sea. In 1890, the few killable seals that appeared never had time in which to "haul up" over the land. They simply landed: then, at the moment of landing, were marked and hustled into a drive. Up to the 20th of July, last summer, from the day of their first general hauling as a body in June, this class of seals never had an opportunity to get wonted or accustomed to the land—never were permitted to rest long enough to do so after landing.

ORDER AND TIME OF THE HAULING OF THE HOLLUSCHICKIE.

A careful comparison day by day of the arrival of the killable seals last season (1890), with my field notes of 1872-1874, declares that the holluschickie are hauling to-day in the same time and order of arrival,

from the beginning of the season in May until its close, by the end of July; but their vastly reduced numbers and the rigorous driving to which this remnant is subjected have caused them to abandon the hauling grounds of 1872-1874 entirely, with the solitary exception of that sand beach under Middle Hill, English Bay, of St. Paul. They now haul close into the rear of the breeding seals on the several rookery grounds of both islands; hauling there, as I have said before, for shelter and protection.

When the old bulls first appear for the season at the rookery grounds early in May of every year, as a rule only a few squads of holluschickie accompany them. While these early bulls land promptly by the 4th to the 6th of that month, and all of them arrive and land by the close of it, yet the holluschickie do not come ashore until the 15th or 20th of May, as a rule; sometimes a few days earlier and sometimes a few days later. Only a few hundred of these young males land at any one place or time as early as the 15th of May.

But, after this date, rapidly after the 25th to the 31st of May, the holluschickie of the largest growth, i. e., the 5, 4, 3, and many 2 year old males, begin to haul. By the 14th to the 20th of June they then appear in their finest form and number for the season, being joined now by the half bulls, the 2 and 3-year olds and quite a number of yearling males. By the 10th of July their numbers are beginning to largely increase, owing to the influx at this time of that great body of the last year's pups or yearlings. By the 20th of July the yearlings have put in their appearance for the season in full force. Very few yearling females make their appearance until the 15th of July, but by the 20th they literally swarmed out, in 1872-1874, and mixed up completely with the young and older males and females, as the rookeries relax their discipline and "pod" or scatter out.

By the 20th of July annually, therefore, the seals of all ages have arrived that are to arrive. It was so in 1872; it was so last season, 1890.

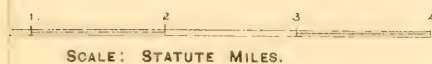
If it were true, as the idea of some sealers would have it, that the young male seals all haul on the ground contiguous to the rookery where they were born, it would be very puzzling to account for several marked exceptions to that rule; but it is not true. Young male seals born upon St. Paul Island have been repeatedly marked as they left for the season, and these marked pups have been taken up in St. George drives as yearlings, 2-year olds, and even 4-year olds, during the following season or seasons. This experiment was repeatedly made by the Russians,¹ and has been made once by us.

¹It is entertaining to note in this connection that the Russians themselves, with the object of testing this mooted query, during the later years of their possession of the islands drove up a number of young males from Lukannon, cut off their ears, and turned them out to sea again. The following season, when the droves came in from the hauling grounds to the slaughtering fields, quite a number of those cropped seals were in the drives: but, instead of being found all at one place—the place from whence they were driven the year before—they were scattered examples of cropies from every point on the island. The same experiment was again made by our people in 1870 (the natives having told them of this prior undertaking) and they went also to Lukannon, drove up 100 young males, cut off their left ears, and set them free in turn. Of this number, during the summer of 1872, when I was there, the natives found in their driving of 75,000 seals from the different hauling grounds of St. Paul up to the village killing grounds, two on Novastoshnah rookery, 10 miles north of Lukannon, and two or three from English Bay and Tolstoi rookeries, 6 miles west by water; one or two were taken on St. George Island, 36 miles to the southeast, and not one from Lukannon was found among those that were driven from there. Probably had all the young males on the two islands this season been examined, the rest



ORGE ISLAND; Pribylov Group.

Position of the Fur Seal Breeding and Hauling
 one, July, 1873—74, and August 1890, and drawn
 HENRY W. ELLIOTT.





Area and Position of the Fur Seal Breeding and Hauling Grounds.

Season of 1872—74.

(Insofar as the Breeding Grounds of 1890 lay the above location is correct also, but the Hauling Grounds of 1890 can not be seen in the scale of this chart—they have practically disappeared. H. W. E.)

ST. GEORGE ISLAND; Pribilof Group.

Showing the Area and Position of the Fur Seal Breeding and Hauling Grounds. Surveyed June July, 1873—74, and August 1890, and drawn August 2nd, 1890. By HENRY W. ELLIOTT.

0 1 2
SCALE: STATUTE MILES.

I now know that the holluschickie haul on either St. George or St. Paul islands indifferently, as they go and come throughout the sealing season. The proportion of St. Paul bred holluschickie, must be quite large on St. George, since that island lays directly in the path of the incoming and outgoing seals as they first arrive from the south at the opening of the season and thereafter sally forth from the St. Paul hauling grounds during the summer at frequent intervals to fish and search for similar food. The greatest cod and herring schools, pollock and salmon runs of Bering Sea lie to the southeastward of St. Paul, around to the northwest, and St. George is squarely in the road.

These hauling grounds of St. George Island, which were never, by the nature of the land, as broad or extended as those of St. Paul, were, however, in 1872 polished very brightly by the holluschickie: but now, in 1890, the same utter desolation which prevails over them on St. Paul also exists there. The hauling grounds at Zapadne are simply grass-grown, also those of Starry Ateel; while the Great Eastern parade is a mere suggestion, and the fine sweep of the North Rookery looks like a soft green lawn from the village. As for the Little Eastern, not a single drive has been made from there this year; at no time was there more than 12 to 15 holluschickie upon its grassy borders last July or August!

As for St. Paul, I walked day after day last summer, over the grass-grown deserted hauling grounds of Southwest Point, of Zapadne, of English Bay, Lukannon, Ketavie, Polavina, and Novastoshnah with the same feeling I should have were I to enter upon and walk over the abandoned and grass-grown streets of a once populous and busy city, which I had previously visited in all of its prosperity, only sixteen years ago!

In order to present a clear, sharp contrast between the appearance and condition of these hauling grounds and their occupants as they were in 1872-1874 and are to-day, 1890, I have arranged the following epitome. I do not carry the parallel column beyond St. Paul, since the status of St. George is precisely similar: My publication of the 1874 notes were made in my *Monograph of the Seal Islands: Tenth Census, United States, 1881*.

of the croppies that had returned from the perils of the deep, whence they sojourned during the winter, would have been distributed quite equally about the Pribilof hauling grounds. Although the natives say that they think the cutting off of the animal's ear gives the water such access to its head as to cause its death, yet, I noticed that those examples which we had recognized by this auricular mutilation, were normally fat and well developed. Their theory does not appeal to my belief, and it certainly requires confirmation.

These experiments would tend to prove very cogently and conclusively that when the seals approach the islands in the spring they have nothing in their minds but a general instinctive appreciation of the fitness of the land as a whole; and no special fondness or determination to select any one particular spot, not even the place of their birth. A study of my map of the distribution of the seal life on St. Paul clearly indicates that the landing of the seals on the respective rookeries is influenced greatly by the direction of the wind at the time of their approach to the islands in the spring and early summer. The prevailing airs, blowing as they do at that season from the north and northwest, carry far out to sea the odor of the old rookery flats, together with the fresh scent of the pioneer bulls which have located themselves on these breeding grounds three or four weeks in advance of their kind. The seals come up from the great North Pacific, and hence it will be seen that the rookeries of the south and southeastern shores of St. Paul Island receive nearly all the seal life, although there are miles of perfectly eligible ground at Nahsayverniah or north shore. To settle this matter beyond all argument, however, I know is an exceedingly difficult task, for the identification of individuals from one season to another among the hundreds of thousands and even millions that come under the eye on one or all of these great rookeries, is well nigh impossible.

CONDITION OF THE HAULING GROUNDS, ST. PAUL ISLAND, PRIBILOV GROUP.

[From my field notes made in 1872-1874, and published in 1874, and again in 1881.]

Status of 1872-1874.

ZOLTOI.

JUNE 19, 1872 (pp. 50, 51).

These Zoltai sands are, however, a famous rendezvous for the holluschickie, and from them during the season the natives make regular drives, having only to step out from their houses in the morning and walk back a few rods to find their fur-bearing quarry.

JUNE 20, 1872 (p. 71).

* * * If the weather was favorable for landing, i. e., cool, moist, and foggy, the fresh hauling of the holluschickie would cover the bare grounds again in a very short space of time. Sometimes, in a few hours after the driving of every seal from Zoltai sands over to the killing fields adjacent those dunes and the beach in question would be swarming anew with fresh arrivals.

JULY 20, 1874 (p. 72).

As matters are to-day 100,000 seals alone can be taken and skinned in less than forty working days within a radius of $1\frac{1}{2}$ miles from the village, * * * hence the driving, with the exception of two experimental droves, * * * has never been made from longer distances than Tolstoi to the westward, Lukannon to the northward, and Zoltai to the southward of the killing grounds at St. Paul village.

TOLSTOI.

(Page 53.)

Directly to the west from Lukannon, up along and around the head of the lagoon, is the seal path road over which the natives bring the holluschickie from Tolstoi.

JULY 20, 1874 (p. 72).

As matters are to-day 100,000 seals on St. Paul alone can be taken and skinned in less than forty working days within a radius of $1\frac{1}{2}$ miles from the village and from the salt house of Northeast Point; hence the driving, with the exception of two experimental droves, which I witnessed in 1872, has never been made from longer distances than Tolstoi to the westward, Lukannon to the northward, and Zoltai to the southward of the killing grounds at St. Paul village.

[From my field notes as per date, made last summer.]

Status of 1890.

ZOLTOI.

MAY 22, 1890.

The sand has drifted very slightly from its boundaries during the last eighteen years.

JUNE 19, 1890.

Not a single holluschickie of any age whatever on Zoltai this day, and there has not been a killable seal there thus far this season.

JUNE 22, 1890.

Fine weather for seals to haul continues, but the seals do not haul; not a single seal on Zoltai sands this morning. Has not been a holluschickie there yet, and this was the never-failing resort of the natives in 1872-1876. Therefore, this vacancy on Zoltai makes a deep impression on one who has stood there in 1872-1874 and observed the swarming platoons of hauling holluschickie, now entirely vanished.

JULY 19, 1890.

Not a single holluschickie on Zoltai sands this morning, and not one has hauled there, thus far, this season.

TOLSTOI.

JUNE 15, 1890.

During the last ten days, while inspecting the several breeding grounds of this island, I have paid careful attention to every squad of holluschickie that has appeared, and except as to numbers I do not observe any change up to date in their habit of hauling early in the season. These early squads appear just above the surf margin at Tolstoi in English Bay * * * precisely as they did in 1872, only the number is smaller.

JUNE 19, 1890.

* * * I had a full sweep of English Bay; a small squad of perhaps 150 holluschickie at Middle Hill and another small pod at the intersection of the sand beach with Tolstoi rookery.

JUNE 22, 1890.

* * * At this time in 1872-1874, inclusive, I never glanced over at Zoltai but I saw holluschickie coming and going from and to the sea in steady files and platoons. I never looked over the broad sweep of English Bay beach from the high sand dunes of Tolstoi but to see the same sight, only in vastly greater form

1872, 1874 and 1890,
by
HENRY W. ELLIOTT.



ST. PAUL ISLAND.

A REVISED, GENERAL MAP OF
St. Paul Island; Pribilof Group.

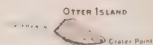
Showing the Area and position of the Hauling Grounds
of 1872 and the location of the Rookeries of 1872—
74 and 1890.

Scale in Statute Miles

- Area and position of the Hauling Grounds, 1872-74.
- Location of the Breeding Grounds 1872-74 and '90.

NOTE.—The Hauling Grounds of 1890 are so scant in area
that they can scarcely be seen on this scale, large as it
is; I indicate them by white spots, thus: ○

Surveyed and Drawn during the Seasons of
1872, 1874 and 1890,
by
HENRY W. ELLIOTT.



and numbers. * * * I do not see to-day, except at Middle Hill, the least suggestion of the past. Will it improve?

JULY 12, 1890.

* * * When it is borne in mind that in the very height of the season, after five days' rest, or nonattention, only 633 medium fur-seal skins, mostly 5½ pounds clean skins, or 2-year olds, can be secured from the combined scraping of everything in English Bay (on Zapadnie we know there is nothing), Middle Hill, Tolstoi, Lukannon, and Ketavie, the extraordinary condition of these interests can be well understood in a general way. Such a driving in 1872, at this time and circumstance of weather, would have brought 100,000 holluschickie up here, instead of the 5,150 to-day. Three cows in this drive.

LUKANNON.

JUNE 20, 1872.

The sand dunes to the west and to the north are covered with the most luxuriant grass, abruptly emarginated by the sharp abrasion of the hauling seals. This is shown very clearly on the general map.

* * * This is the point down along the flat shoals of Lukannon Bay where the sand dunes are most characteristic, as they rise in their wind-whirled forms just above the surf wash. This, also, is where the natives come from the village during the early mornings of the season for driving to get any number of holluschickie.

JULY 12, 1872.

The task of getting up early in the morning and going out to the several hauling grounds closely adjacent is really all there is of the labor involved in securing the number of seals required for the day's work on the killing grounds. The two, three, or four natives upon whom, in rotation, this duty is devolved by the order of their chief, rise at first glimpse of dawn, between 1 and 2 o'clock, and hasten over to Lukannon, Tolstoi, or Zoltoi, as the case may be: "walk out" their holluschickie, and have them duly on the slaughtering field before 6 or 7 o'clock, as a rule, in the morning. In favorable weather the "drive" from Tolstoi consumes two and a-half to three hours' time; from Lukannon, about two hours, and is often done in an hour and a-half, while Zoltoi is so near by that the time is merely nominal.

JULY 20, 1872.

As matters are to-day 100,000 seals on St. Paul alone can be taken and skinned within a radius of 1½ miles from the village; * * * hence the driving * * * has never been made from longer distances than Tolstoi to the westward, Lukannon to the northward, and Zoltoi to the southward of the killing grounds at St. Paul village.

H. Doc. 175—6

LUKANNON.

JUNE 19, 1890.

I ascended the basaltic ridge, between Lukannon sands and the village, late this morning, between 8 and 9 o'clock. Not a single seal, old or young, on these hauling grounds and sands of Lukannon.

JUNE 21, 1890.

From the Volcanic Ridge I had a clear view of Lukannon beach and hauling grounds. Not a seal upon it of any age, and the weather superb for seals to haul in; cool, moist, and foggy.

JUNE 24, 1890.

* * * In the afternoon I took a survey of Lukannon Bay and hauling grounds. Not a seal on the beach except a half-dozen half bulls abreast of the Volcanic Ridge. * * *

JULY 1, 1890.

Not a seal on the hauling ridge and sands of Lukannon Bay, and none on Ketavie.

JULY 8, 1890.

I came down on the sand beach between Tonkie Mees and Lukannon. Not a seal has hauled there yet, this year, a place where thousands upon tens of thousands were to be seen at this time in 1872!

JULY 13, 1890.

Along the entire spread of Lukannon, Polavina, and Northeast Point sand beach, 8 miles, nearly, I did not see a single young seal; only a dozen or two old, worthless bulls scattered here and there at wide intervals. Over this extent and at this time in 1872 such a walk as mine this morning would have brought me in contact with and in sight of 50,000 to 100,000 holluschickie! and the weather simply superb hauling weather all day yesterday, last night, and this morning.

ZAPADNIE.

JULY 14, 1874.

The holluschickie that sport here on the parade plateau, and indeed over all the western extent of the English Bay hauling grounds, have never been visited by the natives for the purpose of selecting killing drives since 1872, inasmuch as more seals than were wanted have always been procured from Zoltoi, Lukanon, and Lower Tolstoi points, which are all very close to the village.

JULY 4, 1872.

I stood on the Tolstoi sand dunes one afternoon, toward the middle of July, and had under my eyes in one straight forward sweep from my feet to Zapadnie 1,500,000 seals spread out on those hauling (and breeding) grounds. Of those, I estimated fully one-half at that time were pups, yearlings, and holluschickie. The rookeries across the bay were plainly in sight and so crowded that they looked exactly as I have seen surfaces appear upon which bees had swarmed in obedience to that din and racket made by the watchful apiarian when he desires to hive those restless honey makers.

JULY 22, 1874.

* * * and a fair track for the holluschickie, 500 feet wide, left clear, over which they have traveled quite extensively this season, some 20,000 to 25,000 of them, at least, lying out around the old salt house to-day.

POLAVINA.

JULY 20, 1874.

* * * Surmounting this lava bed is a cap of ferruginous cement and tufa, from 3 to 10 feet in thickness, making a reddish floor upon which the seals patter in their restless, never-ceasing evolutions, sleeping or waking on the land. It is as great a single-parade plateau of polished cement as that of the reef, but we are unable from any point of observation to appreciate it, inasmuch as we can not stand high enough to overlook it. * * * The rookery itself occupies only a small

ZAPADNIE.

JULY 3, 1890.

These drives at Zapadnie are made just as they are made at all the other rookeries this season—just swept up from the immediate skirts of the breeding seals, cows, pups, and bulls. This method of driving was not even suggested at any time in 1872-1874. Such a proceeding would have been voted abominable then; it is still more so now. It sweeps every young male seal that is 4, 3, and 2 years old into death as soon as it hauls to-day. Nothing escapes except that which old age or extreme youth saves—or, in other words, the high tax of \$10.22 saves.

JULY 9, 1890.

I went over to Zapadnie early this morning with the natives and witnessed their driving. Most of the scanty drive was taken from the borders of Upper Zapadnie rookery. The whole sweep of Lower Zapadnie did not yield over 200 holluschickie, which had hauled in at several places just upward above the breeding seals. All that large space up above the rookery on Lower Zapadnie which was literally alive with trooping platoons of holluschickie in 1872 is to-day entirely vacant! not a seal on it, and the natives peering over the high bluffs on the south side of and to the westward of the point trying to find a few seals skulking down there on the rocks awash. Their eager search, with their backs turned to this silent parade ground of 1872, made me decidedly thoughtful.

JULY 18, 1890.

This last scrape made here to-day was opened by the appearance of only 1,192 animals on the grounds after a rest of nine days since the last drive from this place; 115 of these 1,192, were old bulls, all over 6 years, and the balance outside of the catch (241) are yearlings, "runty" 2-year-olds, "bitten" 4-year-olds, and a few 5-year-old "wigs." Every 4-year-old "wig" was taken—taken here, as at Polavina yesterday, for the first time this season—every "smooth" 4-year-old was taken in the first drives, and now the dregs are drawn also.

POLAVINA.

JUNE 16, 1890.

I came along on foot to the village, giving Polavina a survey down outside so as to see the old and new seal grass on that famous parade. It is somewhat too soon to arrive at a conclusion, but what I saw and noted causes surprise. Suppose you had, fourteen or sixteen years ago, been upon an eminence overlooking a sheep pasture or fold some three-fourths of a mile in length and 1,500 to 2,000 feet in width, so filled with a herd or flock of sheep as to fairly cover the whole surface

portion of the seal-visited area at this spot. * * * For the reasons cited in a similar example at Zapadnie, no holluschickie have been driven from this point since 1872, though it is one of the easiest worked. It was in the Russian times a pet sealing ground with them.

JULY 14, 1874.

The vast numbers of the holluschickie on this ground of Polavina, where they have not been disturbed for some five years, to mention in the way of taking, * * *

of the earth itself within those lines, from your sight at frequent intervals, and never let you see more than a scattered glimpse of it at any one place or time; then, sixteen years later, to stand again there, as I stood to-day, and look again upon that same place and the assembled life, and then to see nothing there but a few lonely pods of sheep, and they all timidly huddled down at one margin of this pasture, and so few in number that it required really no effort for you to count them one by one—that is precisely the way this rookery and this hauling ground look to me to-day.

JUNE 25, 1890.

The poverty of these celebrated hauling grounds of Polavina is well illustrated by the catch from the drive to-day (263 skins). At this time in 1872 I could have driven from the great parade plateau behind these breeding grounds, under precisely the same circumstances surrounding the drive to-day, 10,000 killable seals! not one over 4 years old, and very few under 3 years old. Comment is needless.

JULY 2, 1890.

Now, to-day, every good 2-year-old, every 3 and 4 year old was knocked down here, out of this 1,930 animals, to get 240 skins. Where at this rate is the new blood for the rookeries to come in, now so desperately needed? * * *

NOVASTOSHNAH.

JULY 2, 1872.

It was a view of such multitudes of amphibians, when I first stood upon the summit of Hutchinson's Hill and looked at the immense spread around me, that suggested to my mind a doubt whether the accurate investigation which I was making would give me courage to maintain the truth in regard to the subject. Hutchinson's Hill is the foundation of this point, which is itself a solid basaltic floor, upon which a mass of breccia has been poured at its northwest corner. It is rough, very rough, in spots, and smoother in other places; but everywhere indicated on my chart it has been polished clean and clear of every spear of grass or trace of moss. The hill is about 120 feet high, and has a rounded summit, over which, and swarming up and down over its flanks to the west and the east is an astonishing aggregate of young male seals or holluschickie. These herds, taken together with the $3\frac{1}{2}$ miles of unbroken rookery belt of solid massed life in reproduction, make a truly amazing sight this afternoon—amazing in its aggregate and infinite in its vast detail.

JULY 16, 1872.

Webster gets all the holluschickie that he wants from one spot on the north shore of the sand-neck beach, west of the foot

NOVASTOSHNAH.

JUNE 15, 1890.

Arrived at Webster's House at 12.30 p. m. * * * The two natives stationed here on watch declared that yesterday, which was a fine day, was employed by them in making a circuit of the point; that they carefully inspected the rookery margin and found only about 300 holluschickie hauled immediately up on the north side of the sealions on the neck. Peter Peshenkov declared that nowhere else was there any holluschickie; that there were a few polseacatchie on the beach just below the south shoulder, and nothing in the line of killable seals, except under the north slope of Hutchinson's Hill, about 200 good ones.

JULY 13, 1890.

Fowler had over 5,000 seals driven up this morning, and when he had finished the killing he had only 473 skins. All the rest too small; chiefly last year's pups. Then in the afternoon, rain coming up, he made a rapid drive of those holluschickie which he had been saving for to-morrow, fearing that the rain would send them into the sea, and secured 168 more, making a total of 641, being the extreme limit reached in any one day's killing up here this year, and a total of 4,135 only. On this day here last year Webster had killed 17,168 seals. Fowler

of Cross Hill. A short drive, and only what he wants for each day's work, is driven. He says that he could kill every day three or four times as many as he does if he had the men here to handle the skins. He takes nothing but large skins, nothing under 7 pounds.

will have no holluschickie to kill to-morrow. Webster killed on the 15th 1,838 more.

" " " The driving up here has radically altered for the worse since 1872-1874. It is a mere raking and scraping now of the rookery margins, no killable seals anywhere else. The parade fields of this once magnificent breeding ground are positively vacant to-day; grass and flowers growing and springing up everywhere all over them. The holluschickie, as they hauled to-day, did not occupy more space than 500 feet by 50 feet in depth upon all the entire extent of this immense habitat of 1872! and the drive of 5,000 seals which we saw on the killing grounds had been scraped from seven different points back of the rookery between the base of Hutchinson's Hill and the southeast terminus of the breeding grounds on the point.

A drawing from nature by the author



VIEW OF THE SAND NECK AND CROSS HILL, NORTHEAST POINT.

Looking up and over from the Big Lake Sand Dunes, Saint Paul Island, July 13, 1890.

SECTION III.

THE METHOD OF DRIVING AND TAKING FUR SEALS ON THE PRIBILOV ISLANDS OF ALASKA, SEASONS OF 1872-1874 AND 1890.

DRIVING.

The increasing difficulty of getting that regular quota of 100,000 young male fur-seal skins annually ever since 1882, due to a steady diminution of supply on the Pribilof Islands, has made it necessary to drive right from the breeding grounds, incessantly, with an annual increased severity during the last six or seven years. The hauling grounds of 1872-1874, which were far distant from these rookeries and upon which large surplus herds of seal rested from the beginning to the end of each season undisturbed, were all abandoned as the seals fell away in numbers, until by 1889-90 grass grew and grows right to the water's edge over them.

The remnants of these herds began as early as 1884 to seek quiet and protection by hauling under the lee of the breeding animals, and in doing so, hauled out and laid down upon the immediate flanks of the breeding cows and bulls, close to them, and often intermingled at the outer edge. Therefore, in order to get the young male seals so hauled, it became necessary as early as 1884-85, to scrape the edges of the rookeries in driving out and up the killable seals: and, in 1889, it was done with great vigor, which was increased, really intensified, during the past season.

This extraordinary driving was never dreamed of in 1872-1874, much less done. Then the young male seals, being in great numbers, landed in the following manner, which I spoke of in 1874:

By reference to the habit of the fur seal, which I have discussed at length, it is now plain and beyond doubt that two-thirds of all the males which are born, and they are equal in numbers to the females born, are never permitted by the remaining third, strongest by natural selection, to land upon the same breeding ground with the females, which always herd thereupon *en masse*. Hence this great band of bachelor seals, or nolluschickie, so fitly termed, when it visits the island, is obliged to live apart entirely, sometimes at some places miles away from the rookeries; and in this admirably perfect method of nature are those seals which can be properly killed without injury to the rookeries, selected and held aside by their own volition: so that the natives can visit and take them without disturbing in the least degree the entire quiet of the breeding grounds, where the stock is perpetuated.

Such was the number and method of the young male seals in 1872-1874. It is very different to day. From the hour of the first driving of 1890, May 21, up to the close of the season, July 20, all this driving was regularly made from rookery grounds, from the immediate margins of the breeding animals, *with the solitary exception of that one place, Middle Hill, English Bay, St. Paul Island. Not a drive was made else-*

where, in the course of which cows and pups and bulls were not disturbed and hustled as the young males were secured. As long as the breeding season was at its height, and the compact, solid organization of the rookeries was unbroken, very few cows were swept into these drives, though the disturbance was incessant and great; but when, after the 18th to the 20th of July, the rutting season subsided and the pups began to pod out, i. e., scatter back over three and five times as much ground as they had previously laid upon, then the cows followed them, and then the young males mixed up right and left and mingled with the herd, since they were no longer attacked or driven here and there by the old bulls. Hence the day or two preceding July 20, was marked by a largely increased number of cows and old bulls in the drives: and, had the driving been permitted later, the nursing cows and old bulls would have been swept into the droves of small male seals by hundreds, where tens had previously been taken in this manner.

The driving of a cow with her udder distended and dragged for miles over rough, sharp rocks, bumping heavily in and out of holes and over tussocks, can not result in ought else than her physical ruin and the death of her young pup which is left behind. Therefore, any driving on these islands which, in order to get the holluschickie, necessitates the sweeping, into that drive, of cows, pups, and bulls, *should terminate instantly on that day it begins*; and since the breaking up and spreading of the breeding animals begins as a rule on the 20th of July (a few days earlier if it should rain hard), that date is the very latest day of permission to drive that can be safely given whenever killing is resumed again for tax and shipment of skins from these islands.

Of course, when seals were in abundance, as in 1872-1879, inclusive, and the sealing gangs never were obliged to go near a rookery to get their quota daily, it did not signify one way or the other as to when and how they went about their work. Then, they never disturbed the breeding animals, no matter when they drove, whether in June, July, or August.

But, to-day, the whole order of hauling is changed. The scanty residuum of that surplus thousands and tens of thousands of killable seals of 1872-1874, haul now in close contact with the rapidly diminishing breeding animals on the rookeries—everywhere, in fact, but on those broad hauling grounds of 1872-1874, as they were wont to do then. They do so naturally and intelligently enough, since it is the last resort for protection and rest that the islands afford.

From the beginning of this season of 1890 (and it was so last year also) the moment a small pod of a few hundred holluschickie hauled up into the rear of a rookery, or appeared on the sand beach just above the surf wash in English Bay under Middle Hill, *that very moment these seals were marked and ordered driven*. They were never allowed to rest long enough to become even acquainted with terra firma ere they were hustled up by the drivers and urged over to the killing grounds.

Last season, during that desperate effort made then to get the catch of 100,000, parties were regularly sent over to drive the holluschickie off from Seevitchie Kammen, from Otter Island, from all points under the high bluffs at Zapadni and Southwest Point, St. Paul, and the north shore of St. George. This year, however, there were too few hauled out on those spots to warrant this effort. There was no sign of seals hauling at all on Otter Island.

When I expressed my surprise at this ferocious driving, begun early in June, I was met by apparent equal surprise on the part of the drivers, who, wondering at my ignorance, assured me that they had been





A drawing from life by the author

NATIVE DRIVERS BRINGING IN A DRIVE OF HOLLUSCHICKIE, SAINT PAUL ISLAND, JULY 4, 1872.

View looking over the Lagoon flats and Village Cove, with Tolstoi in the distance on the right. This drive has been brought over from Tolstoi.

driving seals in this method ever since 1885—"had been obliged to or go without the seals."¹

The driving itself, in so far as the conduct of the natives conducting the labor was concerned, was as carefully and well done as it could be. They avoided to the very best of their ability, any undue urging or hastening of the drive overland from the rookeries; they avoided as nearly as they could, under the circumstances, sweeping up pods of cows and pups; did all that they could to make as little disturbance among the breeding animals as possible. But even with all their care and sincere reluctance to disturb the rookeries, cows were repeatedly taken up in their scraping drives on the margins of all the rookeries, and their pups left floundering behind to starve and perish ultimately.

The manner to-day of driving overland to the killing grounds is unchanged from the method of 1872; but the regular driving from every spot resorted to by the holluschickie on both islands has caused the establishment of killing grounds and a salt house as early as 1879 at Stony Point (Tonkie Mees), and a slaughter field at Zapadnie, on St. Paul, the skins being taken from the latter point by a bidarraha, to the village (which was sent over from there every time a killing was made), and they are now hauled down in wagons (mule teams) from the former locality to the salt houses of St. Paul.

In 1872-1874 the work of getting the seals on the killing grounds was conducted in the following manner:

The manner in which the natives captured and drove the holluschickie up from the hauling grounds to the slaughter fields near the two villages of St. Paul and St. George and elsewhere on the islands was then deemed all right. It was in this way: At the beginning of every sealing season, that is, during May and June, large bodies of young bachelor seals do not haul up on land very far from the water, a few rods at the most, and when these first arrivals are sought after, the natives, in capturing them, are obliged to approach sily and run quickly between the dozing seals and the surf before they can take alarm and bolt into the sea. In this manner a dozen Aleuts, running down the sand beach of English Bay in the early morning of some June day, will turn back from the water thousands of seals, just as the moldboard of a plow lays over and back a furrow of earth. When the sleeping seals are first startled they arise and, seeing men between them and the water, immediately turn, lope, and scramble rapidly back up and over the land. The natives then leisurely walk on the flanks and in the rear of the

¹The subjoined extract from my field notes under date of Sunday, July 13, 1890: "Walked up to Northeast Point this morning for the purpose of platting the area and position of the breeding seals on Novastoshnah and the Polavinas; also to see the natives drive at Polavina. I was on the ground at 5 a. m. and saw the whole modus operandi at this place. The holluschickie haul close up against the sand beach drop to the rookery at Polavina; then the drivers, in getting the young males, swept four cows into the drove, and their pups were left behind them on the sand, bruised, mauled, and paralyzed by the stampeding flippers of the herd. To get the holluschickie they are obliged to drive in this violent manner. Another squad of, say, 1,000, mostly 2-year-olds and yearlings, was swept up by these drivers on the parade plateau, and another squad was driven from Little Polavina rookery, the first drive that the natives have been able to find there thus far this season. Along the entire spread of Lukannon, Polavina, and Northeast Point sand beach—8 miles, nearly, of it—I did not see a single young seal—only a dozen or two worthless bulls scattered here and there at wide intervals. Over this extent and at this time in 1872 such a walk as mine this morning would have brought me in contact with and in sight of 50,000 to 100,000 holluschickie! and the weather now simply superb hauling weather all day yesterday, last night, and this morning."

drove thus secured, directing and driving it over to the killing grounds close by the village.¹

PROGRESSION OF A SEAL DRIVE.

A drove of seals on hard or firm, grassy ground, in cool and moist weather, may be driven with safety, at the rate of half a mile an hour. They can be urged along, with the expenditure of a great many lives, however, at the speed of a mile or a mile and a quarter per hour: but, this is seldom done. An old bull seal, fat and unwieldy, can not travel with the younger ones, though it can lope or gallop as it starts across the ground as fast as an ordinary man can run over 100 yards: but, then it fails utterly, falls to the earth supine, entirely exhausted, hot, and gasping for breath.

The holluschickie are urged along the path leading to the killing grounds with very little trouble, and require only three or four men to guide and secure as many thousands at a time. They are permitted frequently to halt and cool off, as heating them injures their fur. These seal halts on the road always impressed me with a species of sentimentalism and regard for the creatures themselves. The men dropping back for a few moments: the awkward shambling and scuffling of the march at once ceases, and the seals stop in their tracks to fan themselves with their hind flippers, while their heaving flanks give rise to subdued, panting sounds. As soon as they apparently cease to gasp for want of breath and are cooled off comparatively, the natives step up once

¹The task of getting up early in the morning and going out to the several hauling grounds closely adjacent, is really all there is of the labor involved in securing the number of seals required for the day's work on the killing grounds. The two, three, or four natives upon whom, in rotation, this duty is devolved by the order of their chief, rise at first glimpse of dawn, between 1 and 2 o'clock, and hasten over to Lukannon, Tolstoi, or Zoltoï, as the case may be, "walk out" their holluschickie, and have them duly on the slaughtering field before 6 or 7 o'clock, as a rule, in the morning. In favorable weather the drive from Tolstoi consumes two and a half to three hours' time; from Lukannon about two hours, and is often done in an hour and a half; while Zoltoï is so near by that the time is merely nominal.

I heard a great deal of talk among the white residents of St. Paul when I first landed and the sealing season opened, about the necessity of "resting" the hauling grounds; in other words they said that if the seals were driven in repeated daily rotation from any one of the hauling grounds, that this would so disturb these animals as to prevent their coming to any extent again thereon during the rest of the season. This theory seemed rational enough to me at the beginning of my investigations, and I was not disposed to question its accuracy; but, subsequent observation directed to this point, particularly satisfied me, and the sealers themselves with whom I was associated, that the driving of the seals had no effect whatever upon the hauling which took place soon or immediately after the field, had been swept clean of seals by the drivers, for that hour. If the weather was favorable for landing, i. e., cool, moist, and foggy, the fresh hauling of the holluschickie would cover the bare grounds again in a very short space of time. Sometimes in a few hours after the driving of every seal from Zoltoï sands over to the killing fields adjacent, those dunes and the beach in question, would be swarming anew with fresh arrivals. If, however, the weather is abnormally warm and sunny, during its prevalence, even if for several consecutive days, no seals to speak of, will haul out on the emptied space. Indeed, if these holluschickie had not been taken away by man from Zoltoï or any other hauling ground on the island, when "tayopli" weather prevailed, most of those seals would have vacated their terrestrial loafing places for the cooler embraces of the sea.

The importance of understanding this fact as to the readiness of the holluschickie to haul promptly out on steadily "swept" ground, provided the weather is inviting, is very great; because, when not understood, it was deemed necessary, even as late as the season of 1872, to "rest" the hauling grounds near the village (from which all the driving has been made since), and make trips to far-away Polavina and distant Zapadnie—an unnecessary expenditure of human time, and a causeless infliction of physical misery upon phocine backs and flippers.





A drawing from nature by the author

A ZOLTOI "DRIVE" OF HOLLUSCHICKIE, JULY 17, 1872.
The herd in waiting on the killing grounds, village of Saint Paul.

more, clatter a few bones with a shout along the line, and the seal shamble begins again—their march to death and the markets of the world is taken up anew.

DOCILITY OF FUR SEALS WHEN DRIVEN.

I was also impressed by the singular docility and amiability of these animals when driven along the road. They never show fight any more than a flock of sheep would do. If, however, a few old seals get mixed in, they usually get so weary that they prefer to come to a standstill and fight rather than move; otherwise, no sign whatever of resistance is made by the drove from the moment it is intercepted and turned up from the hauling grounds, to that time of its destruction at the hands of the sealing gang.

This disposition of the old seals to fight rather than endure the panting torture of travel, is of great advantage to all parties concerned, for they are worthless, commercially: and, the natives are only too glad to let them drop behind, where they remain unmolested, eventually returning to the sea. The fur on them is of little or no value; their under wool being very much shorter, coarser, and more scant than in the younger; especially so on the posterior parts along the median line of the back.

It is quite impossible, however, to get them all of one age without an extraordinary amount of stir and bustle, which the Aleuts do not like to precipitate. Hence the drive will be found to consist usually of a bare majority of 3 and 4 year olds, the rest being 2-year olds principally, and a very few at wide intervals of 5-year-olds, the yearlings seldom ever getting mixed up prior to the 20th July, annually.

METHOD OF LAND TRAVEL.

As the drove progresses along the path to the slaughtering grounds the seals all move in about the same way; they go ahead with a kind of walking step and a sliding, shambling gallop. The progression of the whole caravan is a succession of starts, spasmodic and irregular, made every few minutes, the seals pausing to catch their breath and make, as it were, a plaintive survey and mute protest. Every now and then a seal will get weak in the lumbar region, then drag its posteriors along for a short distance, finally drop breathless and exhausted, quivering and panting, not to revive for hours, days, perhaps, and often never. During the driest driving days, or those days when the temperature does not combine with wet fog to keep the path moist and cool, quite a large number of the weakest animals in the drove will be thus laid out and left on the track. If one of these prostrate seals is not too much heated at the time, the native driver usually taps the beast over the head and removes its skin.¹

¹The fur seal, like all of the pinnipeds, has no sweat glands. Hence, when it is heated, it cools off by the same process of panting which is so characteristic of the dog, accompanied by the fanning that I have hitherto fully described. The heavy breathing and low grunting of a tired drove of seals on a warmer day than usual, can be heard several hundred yards away. It is surprising how quickly the hair and fur will come out of the skin of a blood-heated seal—literally rubs off bodily at a touch of the finger. A fine specimen of a 3 year-old holluschickie fell in its tracks at the head of the Lagoon while being driven to the village killing grounds. I asked that it be skinned with special reference to mounting. Accordingly a native was sent for, who was on the spot, knife in hand, within less than thirty minutes from the moment that this seal fell in the road: yet, soon after he had got fairly to work, patches of the fur and hair came off here and there, wherever he chanced to clutch the skin.

PROSTRATION OF FUR SEALS BY HEAT.

This prostration from exertion will always happen, no matter how carefully they are driven; and in the longer drives, such as 2½ and 5 miles from Zapadni on the west, or from Polavina on the north, to the village at St. Paul, as much as 3 or 4 per cent of the whole drive will be thus dropped on the road. Hence I felt and feel satisfied, from my observation and close attention to this feature, that a considerable number of those that are thus rejected from the drove and are able to rally and return to the water die subsequently from internal injuries sustained on the trip, superinduced by this overexertion. I therefore think it highly improper and impolitic to extend the drives of the holluschickie over any distance on St. Paul Island exceeding a mile, or a mile and a half. It is better for all parties concerned, and the business, too, that salt houses be erected and killing grounds established contiguous to all of the great hauling grounds, 2 miles distant from the village on St. Paul Island, should the business ever be developed above the present limit, or should the exigencies of the future require a quota from all these places in order to make up the 100,000 which may be lawfully taken. I used this language in 1874 and repeat it to-day.

ABUNDANT SUPPLY OF HOLLUSCHICKIE.

As matters were in 1874, 100,000 seals alone on St. Paul were taken and skinned in less than forty working days within a radius of 1½ miles from the village, and from the salt house at Northeast Point. Hence the driving, with the exception of two experimental droves which I witnessed in 1872, has never been made from longer distances than Tolstoi to the eastward, Lukannon to the northward, and Zoltoi to the southward of the killing grounds at St. Paul village, and I then said should, however, an abnormal season recur, in which the larger proportion of days during the right period for taking the skins be warmish and dry, it might be necessary, in order to get even 75,000 seals within the twenty-eight or thirty days of their prime condition, for drives to be made from the other great hauling grounds to the westward and northward, which are now, and have been for the last ten years, entirely unnoticed by the sealers.

KILLING THE SEALS.

The seals, when finally driven upon those flats between the East landing and the village, and almost under the windows of the dwellings, were in 1872, and are herded there now, until cool and rested. The drives are usually made very early in the morning, at the first breaking of day, which is half past 1 or 2 o'clock of June and July in these latitudes.

They arrive and cool off on the slaughtering grounds, so that by 6 or 7 o'clock, after breakfast, the able-bodied male population turn out from the village and go down to engage in the work of slaughter. The men are dressed in their ordinary working garb of thick flannel shirts, stout cassimere or canvas pants, over which the "tarbossa" boots are drawn. If it rains they wear their "kamlaikas," made of the intestines and throats of the sea lion and fur seal. Thus dressed they are each armed with a club, a stout oaken or hickory bludgeon, which has been made particularly for the purpose at New London, Conn., and imported here for this especial service. These sealing clubs are about 5 or 6 feet in length, 3 inches in diameter at their heads, and the thickness of a man's





A drawing from nature by the author.

EAST LANDING.

THE KILLING GANG AT WORK ON THE VILLAGE SLAUGHTER FIELD, SAINT PAUL ISLAND, JULY 4, 1872.

View looking over to the Black Bluffs and East Landing, from the village salt houses. [To-day the clubbing is done by only three or four men, who do nothing else; the rest "flipper" and "skin."]

forearm where they are grasped by the hands. Each native also has his stabbing knife, his skinning knife, and his whetstone. These are laid upon the grass convenient when the work of braining or knocking the seals down is in progress. This is all the apparatus which they have for killing and skinning.

THE KILLING GANG AT WORK.

When the men gather for this work, they are under the control of their chosen foremen or chiefs—usually on St. Paul divided into two working parties at the village, and a subparty at Northeast Point, where another salt house and slaughtering field is established. At the signal of the chief the work of the day begins by two of the men stepping into the drove corraled on the flats, and driving out from it 50 or 100 seals at a time, making what they call a "pod," which they surround in a circle, huddling the seals one on another as they narrow it down, until they are directly within reach and under their clubs. Then the chief, after he has cast his experienced eye over the struggling, writhing "kantickie" in the center, passes the word that such and such a seal is bitten, that such and such a seal is too young, that such and such a seal is too old. The attention of his men being called to these points, he gives the word "strike!" and instantly the heavy clubs come down all around, and every one that is eligible, is stretched out stunned and motionless, in less time really than I take to tell it. Those seals spared by the order of the chief now struggle from under and over the bodies of their insensible companions and pass, hustled off by the natives, back to the sea.¹

The clubs are dropped, the men seize the prostrate seals by the hind flippers and drag them out, so they are spread on the ground without touching each other. Then every sealer takes his knife and drives it into the heart at a point between the fore flippers of each stunned form. The blood gushes forth, and the quivering of the animal presently ceases. A single stroke of a heavy oak bludgeon, well and fairly delivered, will crush in at once the slight, thin bones of a fur seal's skull, and lay the creature out almost lifeless. These blows are, however, usually repeated two or three times with each animal, but they are very quickly done. The bleeding, which is immediately effected, is so speedily undertaken in order that the strange reaction, which the sealers call "heating," shall be delayed for half an hour or so, or until the seals can all be drawn out, and laid in some disposition for skinning.

I have noticed that within less than thirty minutes from the time a perfectly sound seal was knocked down, it had so "heated," owing to the day being warmer and drier than usual, that when touching it with my foot great patches of hair and fur scaled off. This is a rather excep-

¹The aim and force with which the native directs his blow determines the death of the seal. If struck direct and violently, a single stroke is enough. The seals' heads are stricken so hard, sometimes, that those crystalline lenses to their eyes fly out from the orbital sockets like hail stones or little pebbles, and have frequently struck me sharply in the face or elsewhere, while I stood near by, watching the killing gang at work.

A singular, lurid green light suddenly suffuses the eye of the fur seal at intervals when it is very much excited, as the "podding" for the clubbers is in progress; and at the moment, when, last raising its head, it sees the uplifted bludgeons on every hand above, fear seems then for the first time to possess it and to instantly gild its eye in this strange manner. When the seal is brained in this state of optical coloration I have noticed that the opalescent tinting remained well defined for many hours, or a whole day after death. These remarkable flashes are very characteristic to the eyes of the old males during their hurly-burly on the rookeries; but, never appear in the younger classes unless as just described, as far as I could observe.

tionally rapid metamorphosis; it will, however, take place in every instance within an hour or an hour and a half on these warm days after the first blow is struck and the seal is quiet in death. Hence, no time is lost by the prudent chief in directing the removal of the skins as rapidly as the seals are knocked down, and dragged out. If it is a cool day, after bleeding the first "pod" which has been prostrated in the manner described, and after carefully drawing the slain from the heap in which they have fallen, so that the bodies will spread over the ground just free from touching one another, the men turn to and strike down another "pod," and so on until a whole thousand, or two, are laid out, or the drove as corraled, is finished. The day, however, must be raw and cold for this wholesale method. Then, after killing, they turn to work and skin; but if it is a warm day every pod is skinned as soon as it is knocked down.

The labor of skinning is exceedingly severe, and is trying even to an expert, demanding long practice ere the muscles of the back and thighs are so developed as to permit a man to bend down to and finish well a fair day's work. The knives used by the natives for skinning are ordinary kitchen or case-handled butcher knives. They are sharpened to cutting edges, as keen as razors: but, something about the skins of the seal, perhaps fine, comminuted sand along the abdomen, so dulls these knives as the natives work, that they are constantly obliged to whet them while busy stripping the pelts.

The body of the seal, preparatory to skinning, is rolled over and balanced squarely on its back; then the native makes a single swift cut through the skin down along the neck, chest, and belly, from the lower jaw to the root of the tail, using for this purpose his long stabbing knife.¹ The fore and hind flippers are then successively lifted as the man straddles the seal, and stoops down to his work over it; then a sweeping circular incision is made through the skin on them, just at the point where the body fur ends. Then, seizing a flap of the hide on either one side or the other of the abdomen, the man proceeds with his smaller, shorter butcher

¹ When turning these stunned and senseless carcasses the only physical danger of which the sealers run the slightest risk, during the whole circuit of their work, occurs thus: At this moment the prone and quivering body of the holluschickie is not wholly inert, perhaps, though it is nine times out of ten: and, as the native takes hold of a fore flipper to jerk the carcass over on to its back the half-brained seal arouses, snaps suddenly and viciously, often biting the hands or legs of the unwary skimmers, who then come leisurely and unconcernedly up into the surgeon's office at the village for bandages, etc. A few men are bitten every day or two, during the season on the islands in this manner, but I have never learned of any serious result following any case. The sealers, as might be expected, become exceedingly expert in keeping their knives sharp, putting edges on them as keen as razors, and in an instant detect any dullness by passing the balls of their thumbs over the suspected edges to the blades. The white sealers of the Antarctic always used the orthodox butchers' "steel" in sharpening their knives: but, these natives never have, and probably never will abandon those little whetstones above referred to.

During the Russian management, and throughout the strife in killing by our own people in 1868, a very large number of the skins were cut through, here and there, by the slipping of the natives' knives when they were cutting them from the carcasses and "fleensing" them from the superabundance, in spots, of blubber. These knife cuts through the skin, no matter how slight, give great annoyance to the dresser; hence they are always marked down in price. The prompt scrutiny of each skin on the islands by the agent of the Alaska Commercial Company, who rejects everyone of them thus injured, has caused the natives to exercise great care, and the number now so damaged every season is absolutely trifling.

Another source of small loss is due to a habit which the holluschickie have of occasionally biting one another when they are being urged along in the drives, and thus crowded, once in awhile, one upon the other. Usually these examples of "zoobäiden" are detected by the natives prior to the "knocking down," and spared. Yet those which have been nipped on the chest or abdomen can not be thus noticed, and until the skin is lifted the damage is not apprehended.



A drawing from nature by the author.

SEAL ISLAND NATIVE AT WORK SKINNING A FUR SEAL.

"Rolling the carcass out;" on the killing grounds, village of Saint Paul.

knife to rapidly cut the skin clean and free from the body (and blubber), which he rolls over and out from the hide, by hauling up on it as he advances with his work, standing all this time stooped over the carcass so that his hands are but slightly above it, or the ground. This operation of skinning a fair-sized holluschickie *takes the best men only one minute and a half!* but the average time made by the gang on the ground is about four minutes to the seal. Nothing is left of the skin upon the carcass save a small patch of each upper lip on which the coarse mustache grows, the skin on the tip of the lower jaw, the insignificant tail,¹ together with the bare hide of the flippers.

During the last five, six, or seven years, a somewhat different method has been in vogue, by which change the work has been expedited very much. Two or three white men, servants of the company leasing the islands, together with two or three of the natives, alone constitute the killing or clubbing force. They make the selection and knock down the killable seals as the pods are driven up by them in swift rotation; then, four or five of the younger sealers constitute a force known as the "flippering" and stabbing or "sticking" men. These workmen seize each seal, immediately after it is knocked down, and plunge a long knife into its heart at a point directly in the center of its chest between its fore flippers; then, with a single swift sweep of this knife, the skin of the prostrate seal is cut through to the blubber in a straight line from the rims of the lower jaws to the fundament; another circular sweep cuts the skin right around the head so as to just leave all that forward of the eyes and the tip of the lower jaws; then another sweep of the keen blade cuts the furred skin clear from its junction into each naked fore flipper, and a final sweep separates it from the same junction with its hind flippers and the abortive tail. This done, the work of the flippering man ceases: and, he is succeeded in turn by the regular skinner, who steps in soon after, and quickly completes the skinning out of the carcass, as was done in 1872 and described above.

The wooden clubs and steel knives are not essentially different to-day from those used in 1872: and, the treatment of the skins not materially changed in the salt houses; only they are cured more rapidly: salted over, and changed five days after first salting, into a fresh kench, where they lie ready for final binding in ten or twelve days' time from date of first salting. I say five days after first salting, because it is done as soon as that, if possible, though it is not essential—ten days often elapses. This resalting is necessary to insure a complete curing of the edges of the pelts. If it is not done, then a

¹This tail of the fur seal is just a suggestion of the article and that is all. Unlike the abbreviated caudal extremities of the bear or the rabbit, it does not seem to be under the slightest control of its owner—at least I never could see it move to any appreciable degree—when the seal is in action on land. Certainly there is no service required of it: but it does appear to me rather singular that none of the changeful moods of *Callorhinus* are capable of giving rise to even a tremor in its short stump of a tail. It is never raised or depressed, and in fact amounts to a mere excrescence, which many casual observers would not notice. The shrinking, twitching movements of the seal skin here and there at irregular intervals are especially noticed when that animal is asleep, so that even when awake I believe that dermatological motion is an involuntary one. The tail of the sea lion is equally inconsequential; that of the walrus, even more so, while *Phoca vitulina* has one a trifle longer, relatively, and much stouter, fleshier than that of the fur seal.

I found that the natives here were pronounced evolutionists, as are all the many Indian tribes with which I have been thrown in contact during my travels from Mexico to the head of the Stickeen River. They declare that their remote ancestry undoubtedly were fur seals. Indeed, there is a better showing for the brain cases of the fur seal over that of the monkey's skull, as to weight with reference to physical bulk, while their tails are as short or even shorter than most of the anthropoid apes!

great many "soft" spots will be found on the outer edges of the skins from which the fur pulls out, and thus destroys the par value of those skins.

Touching this subject in 1874, I said in relation to the work:

The skins are taken from the field¹ to the salt house, where they are laid out, after being again carefully examined, one upon another. "hair to fat," like so many sheets of paper, with salt profusely spread upon the fleshy sides as they are piled up in the "kenches" or bins.² The salt house is a large barn-like frame structure, so built as to afford one-third of its width in the center, from end, to end clear and open as a passageway: while on each side are rows of stanchions, with sliding planks, which are taken down and put up in the form of deep bins or boxes—"kenches," the sealers call them. As the pile of skins is laid at the bottom of an empty "kench," and salt thrown in on the outer edges, these planks are also put in place, so that the salt may be kept intact until the bin is filled as high up as a man can toss the skins. After lying two or three weeks in this style, they become "pickled," and they are suited then at any time to be taken up and rolled into bundles of two skins to the package, with the hairy side out, tightly corded, ready for shipment from the islands.

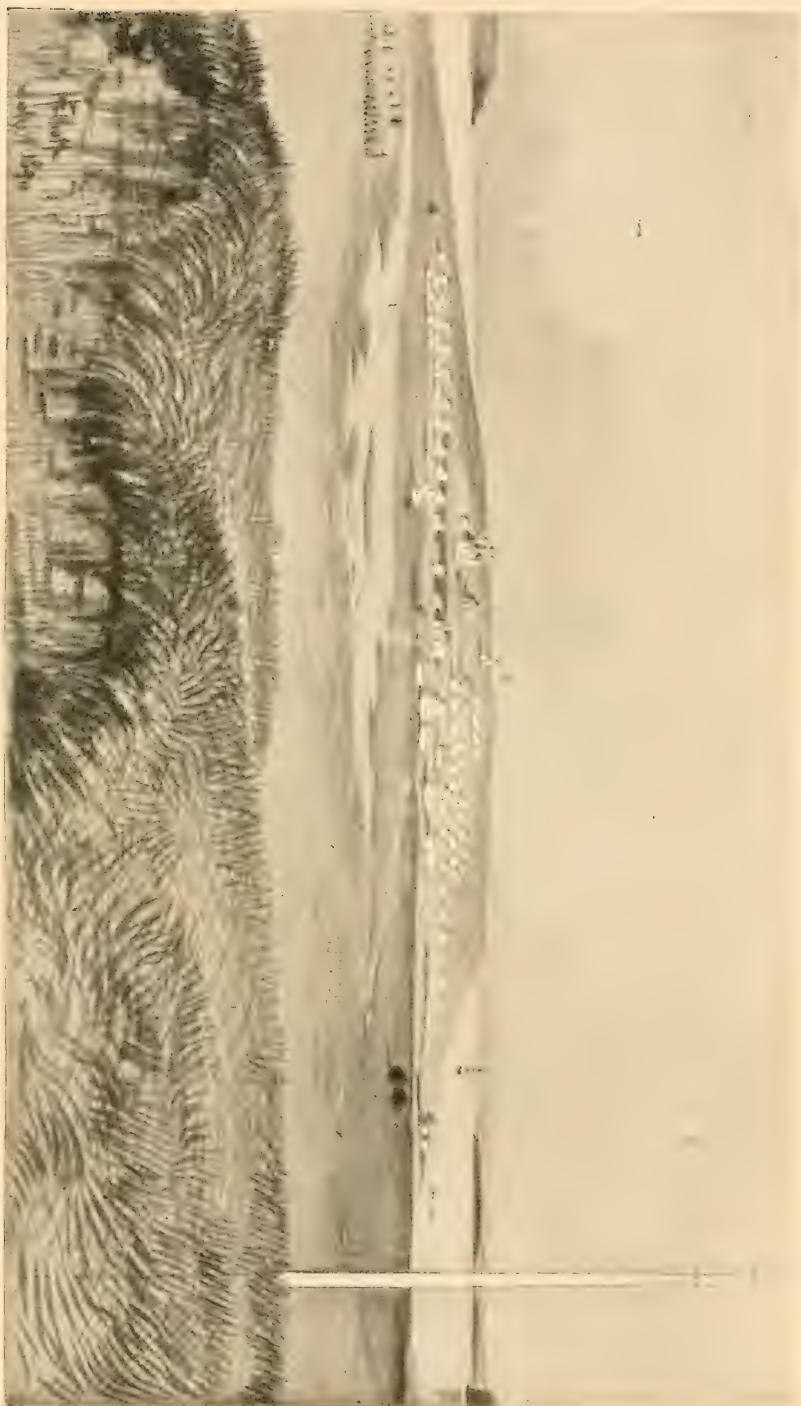
The bundled skins are carried from the salt houses to the baidar, when the order for shipment is given, and pitched into that lighter one by one, to be rapidly stowed: 700 to 1,200 bundles making the average single load. Then, when alongside the steamer, they are again tossed up and on to her deck, from whence they are stowed again in the hold.

DESCRIPTION OF KILLING GROUND AT ST. PAUL VILLAGE.

The killing ground of St. Paul is a bottomless sand flat, only a few feet above high water, which unites the village hill and the reef with the island itself. It is not a stone's throw from the heart of the settlement—in fact, it is right in town—not even suburban: and, a most singular and striking characteristic of the island of St. Paul is the fact that this immense slaughtering field, upon which 55,000 to 70,000 fresh carcasses

¹ Under the old order of affairs, long prior to the present management, the skins were packed up and carried on the backs of the boys and girls, women and old men, to the drying houses and drying frames. When I first arrived, season of 1872, a slight variation was made in this respect by breaking a small Siberian bull into harness and hitching it to a bob cart in which the pelts were hauled. Before the cart was adjusted, however, and the "buik" taught to pull, it was led out to the killing grounds by a ring in its nose, and literally covered with the green seal hides, which were thus packed to the kenches. The natives were delighted with even this partial assistance, but now they have no further concern about it at all, for several mules and carts render prompt and ample service. They were introduced here first in 1874. The Russian American Company, and also the Alaska Commercial Company have brought up three or four horses to St. Paul: but they have been unfortunate in losing them all soon after landing: the voyage and the climate combined, being inimical to equine health. But the mules of the present order of affairs, have been successful in their transportation to and residence on the Pribilof Islands. One of the first of these horses just referred to, perhaps did not have a fair chance for its life. It was saddled one morning and several camp kettles, coffee pots, etc., slung on the crupper for the use of the Russian agent, who was going up to Northeast Point for a week or ten days' visit. He got into the saddle, and while en route, near Polavina, a kettle or pot broke loose behind. The alarmed horse kicked its rider promptly off, and disappeared on a full run in the fog, going toward the bogs of Kamminista, where its lifeless and fox-gnawed body was found several days afterwards.

² The practice of curing in early times was quite different from this rapid and effective process of salting. The skins were then all house, or air dried, pegged out when "green" upon the ground, or else stretched upon a wooden trellis or frame, which stood like a rude fence adjacent to the killing grounds. It was the accumulation of such air-dried skins from the Pribilof Islands at Sitka which rotted so in 1803 that "750,000 of them were cut up or thrown into the sea," and so destroyed. Had they been treated as they now are, such a calamity and hideous waste could not have occurred. The method of air drying which the old settlers employed is well portrayed by the practice of the natives now, who treat a few hundred sea-lions' skins to the process every fall, preparing them thus for shipment to Unalashka, where they are used by brother Aleuts in covering their bidarkies or kyacks. The natives, in speaking to me of this matter, said that whenever the weather was rough and the wind blowing hard, these air-dried seal skins, as they were tossed from the bidarrahs to the ship's deck, numbers of them would frequently turn in the wind and fly clean over the vessel into the water beyond, where they were lost.



A drawing from nature by the author.
Zoltoi Bay.

VILLAGE OF SAINT PAUL, JULY 4, 1890.

View over the village killing grounds from the flagstaff at the East Landing on the Black Bluffs.

THE VILLAGE COVE, LOOKING OVER TO ZAPADNE ACROSS ENGLISH BAY.

have laid every season, since 1854, sloughing away into the sand beneath, has not and does not cause any sickness among the people who live right over them, so to speak. The cool, raw temperature and strong winds peculiar to the place seem to prevent any unhealthy effect from the fermentation of decay. The *Elymus* and other grasses once more take heart and grow with magical vigor over that unsightly spot, to which the sealing gang again returns, repeating their bateau, which we have marked before upon this place, three years ago. In that way, this strip of ground, seen on my map between the village, the East landing, and the Lagoon, contains the bones and the oil drippings and other fragments thereof, of more than 4,000,000 seals slain since 1786, while the slaughter fields at Novostoshnah record the end of a million more!

I remember well the unmitigated sensations of disgust that possessed me when I first landed, April 26, 1872, on the Pribilof Islands, and passed up, from the beach at Lukannon, to the village over the killing grounds. Though there was a heavy coat of snow on the fields, yet each and every one of the 55,000 decaying carcasses was there, and bare: having burned, as it were, their way out to the open air, polluting the same to a sad degree. I was laughed at by the residents who noticed my facial contortions, and assured that this state of smell was nothing to what I should soon experience when the frost and snow had fairly melted. They were correct; the odor along by the end of May was terrific punishment to my olfactories, and continued so for several weeks until my sense of smell became blunted and callous to this stench by long familiarity. Like the old residents, I then became quite unconscious of the prevalence of this rich "funk" and ceased to notice it.

Those who land here, as I did, for the first time, nervously and invariably declare that such an atmosphere must breed a plague or a fever of some kind in the village, and hardly credit the assurance of those who have resided in it for the whole period of their lives, that such a thing was never known to St. Paul, and that the island is remarkably healthy. It is entirely true, however, and after a few weeks' contact or a couple of months' experience at the longest, the most sensitive nose becomes used to that aroma, wafted, as it is, hourly, day in and out, from decaying seal flesh, viscera, and blubber; and, also, it ceases to be an object of attention. The cool, sunless climate during the warmer months has undoubtedly much to do with checking too rapid decomposition and consequent trouble therefrom, which would otherwise arise from the killing grounds.

The freshly skinned carcasses of this season, do not seem to rot, substantially, until the following year. Then, they rapidly slough away into the sand upon which they rest. The envelope of blubber left upon each body, seems to act as an air-tight receiver, holding most of the putrid gases that are evolved from the decaying viscera until their volatile tension causes it to give way. Fortunately, the line of least resistance to that merciful retort, is usually right where it is adjacent to the soil: so, both putrescent fluids and much of the stench within, is deodorized and absorbed before it can contaminate the atmosphere to any great extent. The truth of my observation will be promptly verified if the skeptic chooses to tear open any one of the thousands of gas-distended carcasses in the fall that were skinned in the killing season. If he does so, he will be smitten by the worst smell that human sense can measure; and should he chance to be accompanied by a native, that callous individual will even pinch his grimy nose and exclaim, it is a "keeshlah pahnoot!"

At the close of the third season after the skinning of the seal's body, it will have so rotted and sloughed down as to be marked only by the

bones and a few of the tendinous ligaments. In other words, it requires from thirty to thirty-six months' time for a seal carcass to rot entirely away so nothing but whitened bones remain above ground. The natives govern their driving of the seals and laying out of the fresh bodies according to this fact, for they can and do spread this year a whole season's killing out over the same spot of the field previously covered with such fresh carcasses three summers ago. By alternating with the seasons, thus, the natives are enabled to annually slaughter all of the holluschickie on a relatively small area close by their salt houses and the village, as I have indicated on the map of St. Paul.

DESCRIPTION OF THE KILLING GROUND AT ST. GEORGE VILLAGE.

On St. George the holluschickie are regularly driven to that northeast slope of the village hill which drops down gently to the sea, where they are slaughtered close by and under the houses, as at St. Paul. Those droves which are brought in from the North rookery to the west, and also Starry Arteel, are frequently driven right through the village itself. This slaughtering field of St. George is hard tufa and rocky, but it slopes down to the ocean rapidly enough to drain itself well. Hence the constant rain and humid fogs of summer carry off that which would soon clog and deprive the natives from using the ground year after year in rotation, as they do. Several seasons have occurred, however, when this natural cleansing of the ground above mentioned has not been as thorough as must be, to be used again immediately. Then, the seals were skinned back of the village hill, and in the ravine to the west, on the same slope from the summit.

This village site of St. George to-day, and the killing grounds adjoining, used to be during early Russian occupation, in Pribilov's time, a large sea-lion rookery, the finest one known to either island, St. Paul or St. George. Natives are living there who told me that their fathers had been employed in shooting and driving these sea lions so as to deliberately break up the breeding ground, and thus rid the island of what they considered a superabundant supply of the *Eumetopias*, and thereby to aid and encourage the fresh and increased accession of fur seals from that vast majority peculiar to St. Paul, which could not take place while the sea lions held the land.

These killing grounds at the villages of St. George and St. Paul islands are the chief slaughtering fields. But another killing ground at Zapadnie is established on St. George, with a small salt house, in which the skins as taken, are temporarily cured, and then transported over the trail on the backs of donkeys, to the village salt houses for final salting and bundling. On St. Paul, at Northeast Point, a regular salt house and killing ground has been ordered and maintained by our people, ever since 1868, and some 25,000 to 30,000 skins have been regularly taken there every year since 1870, until last season (1890), when only a trifle over 6,000 were scraped up. Also, on St. Paul, a small killing ground has been established at Stony Point, or Tonkie Mees, ever since 1879. A salt house was built there then: but, during the last four or five years, so few seals have been secured in its vicinity that teams have gone and now go up from the village on the killing days, and haul the fresh pelts directly down to the village salt houses. Another killing ground at Zapadnie, St. Pauls, close by "Antone's House," has been used ever since 1879; but no salt house is erected here, since the natives now row one of their big skin lighters or "bidarrals" right over from the village to this spot, and sail back with the catch for each day's work. Nowhere else on either island have seals been killed by the lessees, since 1870.



A drawing from nature by the author.

THE VILLAGE OF SAINT GEORGE, FROM THE STEAMER'S ANCHORAGE, JULY 5, 1874.

Showing the killing grounds at the base of the hill on the left; Ahlukeyak Hill in the distance, 920 feet.

SECTION IV.

THE SELECTION OF FUR-SEAL SKINS ON THE PRIBILOV ISLANDS, GRADE AND SUPPLY, SEASONS OF 1872-1874 AND 1890.

As the law of 1870 permits the lessees of the seal islands to kill male seals of any age that they may select from the herds of holluschickie there assembled, above 1 year old, this selection has been very rigorously made from the beginning of the leasing in 1870. It is entirely natural, and in accord with business sense that the aim should have been, every year, to get only that single grade of skins which will bring the most money in the best market, at London, England.

In that regular effort made since 1870, to get annually 100,000 seal skins, all to be of the best possible grade, it has been customary during each season to drive up to the killing grounds every herd as it was found hauled out. Then, when ready to kill, pods of from 50 to 100 animals at a time would be taken from this herd, as driven, and then only those of the best grade in that pod were clubbed: the rest being permitted to shamle off and back to the sea. The grade for each summer's work was proclaimed by the general superintendent of the lessees on the islands, before the work of the killing season opened: and the clubbing of the pods was then executed in accordance with this order. Therefore, no seals were killed above that standard set, or below it: no matter how many or how few were driven up.

This growth and grading of the fur seal on the Pribilov Islands I found last summer to be the same as it was in 1872-1874. The following table expresses it:

Table showing the weight, size, and growth of the fur seal (Callorhinus ursinus), from the pup to the adult, male and female.

Age.	Length	Girth.	Gross weight of body.	Weight of skin.	Remarks.
	<i>Inches.</i>	<i>Inches.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
One week.....	12-14	10-10½	6-7½	1½	A male and female, being the only ones of the class handled, June 20, 1873.
Six months.....	24	25	39	3	A mean of 10 examples, males and females, alike in size, November 28, 1873.
One year.....	38	25	39	4½	A mean of 6 examples, males and females, alike in size, July 14, 1873.
Two years.....	45	30	58	5½	A mean of 30 examples, all males, July 24, 1873.
Three years.....	52	36	87	7	A mean of 32 examples, all males, July 24, 1873.
Four years.....	58	42	135	12	A mean of 10 examples, all males, July 24, 1873.
Five years.....	65	52	200	16	A mean of 5 examples, all males, July 24, 1873.
Six years.....	72	64	280	25	A mean of 3 examples, all males, July 24, 1873.
Eight to twenty years.	75-80	70-75	400-500	45-50	An estimate only, calculating on their weight when fat, and early in the season.

I did not permit myself to fall into error by *estimating this matter of weight*, because I early found that the apparent huge bulk of a sealion bull, or fur-seal male, when placed upon the scales, shrank far below my notions. I took a great deal of pains on several occasions, during the killing season of 1872-73, to have a platform scale carted out into the field: then, as the seals were knocked down, and before they were bled, I had them carefully weighed, constructing the above table from the

records thus obtained; also, I made the following classification then (1872), which is still entirely applicable to these seals as they exist now (1890).

CLASSING THE HOLLUSCHICKIE BY AGE.

When the holluschickie are up on land they can be readily separated into their several classes as to age *by the color of their coats and size* when noted, namely, the yearlings, the 2, 3, 4, and 5 year old males. When the yearlings, or the first class, haul out, they are dressed just as they were after they shed their pup coats, and took on their second covering during the previous year, in September and October; now, as they come out in the spring and summer, 1 year old, the males and females *can not be distinguished apart, either by color or size, shape or action*; the yearlings of both sexes have the same steel-gray backs and white stomachs, and are alike in behavior and weight.

Next year these yearling females, which are now trooping out with the youthful males on the hauling grounds, will repair as nubles to the rookeries; while their male companions will be obliged to come again to this same spot, without them.

SHEDDING THE HAIR—STAGEY SEALS.

About the 15th and 20th of every August they have become perceptibly "stagey," or, in other words, their hair is well under way in shedding. All classes, with the exception of the pups, go through this process, at this time, every year. The process requires about six weeks between the first dropping or falling out of the old over hair and its full substitution by the new. This takes place as a rule between August 1 and September 28.

The fur is shed; but it is so shed that the ability of the seal to take to the water and stay there, and not to be physically chilled or disturbed during the process of molting, is never impaired. The whole surface of these extensive breeding grounds, traversed over by us after the seals had gone, was literally matted with the shed hair and fur. This under fur or pelage is, however, so fine and delicate and so much concealed and shaded by the coarser over hair that a careless eye or a superficial observer might be pardoned in failing to notice the fact of its dropping and renewal.

The yearling cows retain the colors of the old coat in the new when they shed it for the first time, and from that time on, year after year, as they live and grow old. The young 3-year-olds and the older cows look exactly alike, as far as color goes, when they haul up at first and dry off on the rookeries, every June and July.

The yearling males, however, make a radical change when they shed for the first time: they then come out from their "staginess" in a nearly uniform dark gray, and gray and black mixed, and lighter, with dark ocher to whitish, on the upper and under parts, respectively. This coat next year, when they appear as 2-year-olds, shedding for the 3-year-old coat, is of a very much darker gray, and so on to the third, fourth, and fifth season; then after this, with age, they begin to grow more gray and brown, with rufous-ocher and whitish-tipped over hair on the shoulders. Some of the very old bulls change in their declining years to a uniform shade all over of dull-grayish ocher. The full glory and beauty of the seal's mustache is denied to him until he has attained his seventh or eighth year.

CHANGE IN PELAGE.

This change for the worse, or deterioration of the pelage of the male fur seals, takes place, as a rule, in the fifth year of their age. It is

thickest and finest in texture during the third and fourth year of life. Hence, in driving the seals on St. Paul and St. George up from the hauling grounds, the natives made, as far as practicable, a selection from males of that age in 1872-74: they tried hard in 1890 to do so, but could not.

COMPARATIVE SIZE OF FEMALES AND MALES.

The female does not get her full growth and weight until the end of her fourth year, so far as I have observed: but she does most of her growing longitudinally, in the first two. After she has passed her fourth and fifth years, she weighs from 30 to 50 pounds more than she did in the days of her youthful maternity (80 lbs.).

The male does not get his full growth and weight until the close of his seventh year, but realizes most of it, osteologically speaking, by the end of the fifth; and from this it may be, perhaps, truly inferred that the male seals live to an average age of 18 or 20 years, if undisturbed, in a normal condition: and, that the females attain 10 or 12 seasons under the same favorable circumstances. Their respective weights, when fully mature and fat in the spring, will, in regard to the male, strike an average of from 400 to 500 pounds, while the females will show a mean of from 70 to 80 pounds.

GRADATION OF THE FUR OF *CALLORHINUS URSINUS*.

The gradation of the fur of *Callorhinus ursinus* may, perhaps, be best presented in the following manner:

One-year-old male, well grown at July 1 of every season: Fur fully developed as to uniform length and thickness and evenness of distribution. It is lighter in color and softer in texture than hereafter during the life of the animal. Average weight of skin as removed by the sealers from the carcass $4\frac{1}{2}$ pounds.

Two-year-old male, well grown at June 1 of every season: Fur fully developed as to even length and thickness and uniformity of distribution. It has now attained the darker buff and fawn color, sometimes almost brown, which it retains throughout the life of the animal. It is slightly and perceptibly firmer and stiffer than it was last year, not being at all "fluffy" as in the yearling dress, now. Average weight of skin as taken from the body $5\frac{1}{2}$ pounds.

Three-year-old male, well grown at June 1 of every season: Fur fully developed as to even length, but a shade longer over the shoulders, where the incipient "wig" is forming; otherwise perfectly uniform in thickness and even distribution. This is the very best grade of pelt which the seal affords during its life. Average weight of skin as taken from the body 7 pounds.

Four-year-old male, well grown at June 1 of every season: Fur fully developed as to even length, except a decided advance in length and perceptible stiffness over the shoulders, in the "wig;" otherwise perfectly uniform in thickness and even distribution. This grade is almost as safe to take, and as good as is the 3-year-old. Average weight of skin as removed 12 pounds.

Five-year-old male, well grown at May to June 1 of every season: Fur fully developed, but much longer and decidedly coarser in the "wig" region; otherwise uniform in thickness and distribution. The coarseness of the fur over the shoulders and disproportionate length thereon destroys that uniformity necessary for rating A1 in the market; in fact, it does not pay to take this skin. Average weight 16 pounds.

Six-year-old male, well grown from May to June 1 of every season: Fur fully developed, still longer and stiffer in the "wig" region, with a

slightly thinner distribution over the post-dorsal region, and shorter. This skin is never taken; it is profitless. Average weight 25 pounds.

Seven-year-old and upward male, from May to June 1 of every season: Fur fully developed, but very unevenly distributed, being relatively scant and short over the posterior dorsal region, while it is twice as long and very coarse in the covering to the shoulders especially and the neck and chest. Skins are valueless to the fur trade. Weights 45 to 60 pounds.

This analysis, as above, is a brief epitome of the entire subject: only it should be added that the female skins are as finely furred as are the best grades of the males when pups are not nursing: and also, that age does not cause the quality of their pelage to deteriorate, which it does to so marked an extent in the males. But, taking them into consideration, is entirely out of the question, and ought to be so forever.

The fetal coat of the pup is composed of coarse black hair alone, the underwool not at all developed. When this is shed and the new coat is put on in September and October, it is furred and haired as a yearling, which I diagnose above. This pelage has, however, no commercial value.

All the skins taken by the company have been prime skins, in the fair sense of the term.

To this diagnosis of 1872-1874 I may add the 4-year-olds are divided by the sealers into "smooth" 4-year-olds and "wigged" 4-year-olds. The "smooth" skin is the finest one in the field: the "wigged" skin is way below par, and never taken unless fear of not getting the quota for the season, impels the clubbing of them. These young bulls vary remarkably in this matter of being "wigged," or not, at the culmination of their fourth year: just as young men at 18, vary as to having mustaches and beard, or not.

Therefore, since the finest skins are the 3-year and "smooth" 4-year olds, the standard set for killing has been kept steadily at that mark: and, unless a 2-year-old was unusually well grown, it and the yearling male has not been clubbed at all, to speak of, until 1887-88. Then it became absolutely necessary to kill a large portion of these smaller seals, or fail to get the quota of 100,000 annually, since the larger seals were missing (had been killed by the driving and clubbing of the preceding seasons). In 1889, in order to get the quota of 100,000, *more than half the entire catch were "long" and "short" 2-year-olds; more than 25,000 "long" yearlings were taken for the first time in the whole period dating from 1870, the balance, some 20,000 only, being the prime 3-year and "smooth" 4-year old skins which have hitherto, prior to 1887, been the only ones taken, as a rule.*

Among the many bits of evidence as to the rapid elimination of the holluschickie, which I gathered last season (1890), one of the most self-asserting is the following statement of the percentage of rejection which took place on these killing grounds of St. Paul in 1872-1874, contrasted with that which I recorded last summer. The standard for 1872-1874 was 3 and "smooth" 4 year old skins (7-pound and 12-pound pelts); *and it was not lowered.* The standard for 1890, at the outset, was the same until the 4th of July; then, the supply of those skins having practically failed, *the standard was dropped on that day to "long" 2-year-olds (5½ to 6½ pound skins), and finally on the 18th to the 20th of July, the days of the last killing permitted, the standard was again dropped so*

¹ A "long" 2-year-old is one that is well grown, or above the average size for that age, i. e., 6-pound skins; a "short" 2-year-old is one that is under grown for its age; i. e., a 5-pound skin. The same classification is applicable and given to the yearlings.

as to take in "short" 2-year-olds and a few "long" yearlings. Yet with all this effort—and the attempt this year to get 60,000 skins was most vigorously made,—only 21,000 skins in round numbers were thus secured,¹ with all possible exertion!

TABLE SHOWING THE REMARKABLE SCARCITY OF KILLABLE FUR SEALS.

Detailed exhibit of percentages of rejection on the killing grounds under the Village: at Zapadnie, and at Stony Point, St. Paul Island.

Date.	Whole number of seals in the driven herd.	Whole number of seals killed.	Percent- age of rejection.	Skin standard of ac- ceptance (nothing under).	Where driven from.	Remarks.
1890.			<i>Per cent.</i>	<i>Pounds.</i>		
June 11	1,200	539	60	7	Reef Crest.....	Four year and 3 year olds only taken; 12 and 7 pound skins.
18	1,750	470	70	7	Tolstoi, Middle Hill.....	Do.
23	2,400	518	75	7	do	Do.
24	1,300	426	71	6½	Reef and Tolstoi bluffs.	Standard lowered so as to take the "long" 2-year-olds; 6½-pound skins.
25	800	263	70	6½	Polavina and Stony Point	Do.
26	344	97	72	6½	Zapadnie	Do.
27	1,628	392	79	6½	Tolstoi and Middle Hill.	Do.
28	1,317	203	85½	6½	Reef Crest.....	Do.
30	1,262	203	84½	6½	Middle Hill, Tolstoi, and English Bay.	Do.
July 1	1,103	120	90	6½	Northeast Point.....	Do.
1	2,000	245	89	6½	Reef Crest.....	Do.
2	1,929	240	88½	6½	Polavina.....	Do.
3	925	180	81	6½	Zapadnie	Do.
4	4,323	432	90½	5½	Tolstoi, Middle Hill, English Bay, Lukannon, and Ketavie.	Standard again lowered so as to take the average 2-year-olds; 5½-pound skins.
7	4,001	350	92	5½	do	Do.
8	1,865	255	87	5½	Polavina.....	Do.
9	867	162	83½	5½	Zapadnie	Do.
10	3,246	377	89	5½	Reef Crest.....	Do.
12	5,150	633	88½	5½	Tolstoi, Middle Hill, English Bay, Lukannon, and Ketavie.	Do.
14	1,592	101	93	5½	Reef Crest.....	Do.
15	4,644	309	93	5½	Tolstoi, Middle Hill, English Bay, Lukannon, and Ketavie.	Do.
17	1,514	172	87	5½	Polavina.....	Do.
17	1,320	197	85½	5½	Lukannon and Ketavie.	Do.
18	1,192	241	79	5½	Zapadnie	Do.

The detailed figures upon which the foregoing tabulation is based, appear in Section VIII, of this report.

In the drive of July 17 from Polavina, above cited, in order to swell the shrinking catch, all the 4-year-old "wigs" in the drive were knocked down. They had been regularly rejected thus far, as they came up daily in the drives. Out of the total of 172 killed in this Polavina drive, 82 were 4-year-old "wigs." Had the standard not been lowered so as to take them the percentage of rejection would have been 95. In the drive of July 18 from Zapadnie, also cited above, all the 4-year-old "wigs" were again taken to swell the diminishing catch; 94 out of the total here of 241, were "wigs." Had they not been taken, 88 per cent of rejection would have been the record of that killing.

On the two last days of killing permitted by the Secretary, viz, July

In the report of the Treasury agent in charge, Mr. Charles J. Goff, for the current year, will be found a detailed daily statement of this work last summer, together with a full and exhaustive tabulation of the work as it has been done during the last twenty years upon these islands. I take much pleasure in reprinting this work of Mr. Goff; it will be found in the Appendix, postea, pp. 219-224.

19 and 20, the standard was again lowered so as to take all the "short" 2 year-olds; and the catch of those last killings was increased more than 70 per cent by the acceptance of 5-pound skins, which had been rejected emphatically up to that hour.

Had the lessees been permitted to kill longer, the result would have been another quick "run to emptyings" by the lapse of three or four more killings. The supply of "short" 2-year-olds would then have been exhausted in turn, as the higher grades had, hitherto. The seals simply do not exist in sufficient numbers to fill the quota, and the above statements of fact prove it.

TABLE SHOWING CONTRAST IN SEASONS OF 1874 AND 1890.

Summary of this percentage of seals rejected from the herds (as driven from the hauling grounds) when upon the killing grounds of St. Paul Island, Pribilof Group, Bering Sea.

[Average percentage of seals "turned out" from the driven "pods."]

Dates of driven herds.	Seasons of 1872-1874, inclusive. <i>a</i>	Season of 1890. <i>b</i>
	<i>Per cent.</i>	<i>Per cent.</i>
From June 5 to 15, inclusive.....	5 to 8	60 to 70
From June 15 to 30, inclusive.....	10 to 12	70 to 85
From July 1 to 15, inclusive.....	35 to 40	<i>c</i> 85 to 90
From July 15 to 20, inclusive.....	60 to 75	<i>d</i> 90 to 93

a Nothing but 7 to 12 pound skins taken from the start to the finish.

b Nothing but 7 to 12 pound skins taken up to July 4; then all 5½-pound skins included; last two days, all 5-pound skins were taken.

c Standard lowered to 5½-pound skins.

d Standard again lowered to 5-pound skins.

The foregoing statement declares that in 1872-1874, to get the quota then secured of 100,000 7 and 12 pound skins (3 and 4 year olds chiefly then taken), required the driving of only 126,000 seals from the hauling grounds to the slaughter fields.

But in 1890, if a quota of 100,000 such skins could have been secured, it would have required the driving of at least 1,000,000 seals!

It is, to-day, an extremely liberal estimate of mine when I admit the existence of 80,000 holluschickie, or male seals, from 1 year old to 4-year-olds, as left upon these islands of Pribilof July 31, 1890; and 9 per cent of this 80,000 are yearlings!

The strange absence of a due proportion of 2-year-olds in the assembled holluschickie of this year (1890), I believe is largely due to the killing of some 25,000 yearlings last summer, in that desperate effort made then, to fill out the quota allowed of 100,000, coupled with the subsequent deadly effect of that summer's driving upon the spared yearlings.

The following field notes and data, are now given in this connection:

JUNE 23, 1890.

Those two pods of holluschickie which I have observed under Middle Hill and Tolstoi during the last two days, were driven up this morning. I made an itemized count of percentages—the number driven up in each "pod" and the number turned out to the sea from it.

Pod number.	Driven up.	Number killed.	Pod number.	Driven up.	Number killed.
1 <i>a</i>			8	50	15
2	79	9	9	47	7
3	27	7	10	39	9
4	37	8	11	45	6
5	61	15	12	69	9
6	46	10			
7	61	15	Total.....	561	110

a Not in time to count it.

Eleven pods of 561 animals, and only 110 of them taken, or 80 per cent of the whole number driven, rejected.

This gives a fair average of the whole drive to-day, some 2,800 animals, since 518 skins only were taken.

At this time in 1872, only 10 to 12 per cent of such a drive were turned away: the standard being the same to-day, as it was then. To-day all the seals taken, with the rare example of a few 4-year-olds, were 3-year-olds, not one 4-year-old in twenty, taken, and a remarkable absence of 2-year-olds—a few only.

Those turned away were—95 per cent of them at least were—"long" and "short" yearlings, a few 5-year-olds, and a very few 6-year-old bulls, and a very few "short" 2-year-olds also.

A small pod of holluschickie have just made their appearance, close up under the bluffs at Zoltoi, 100 to 150 of them at about 11 a. m. Now, that calls to my mind this question, Where have those tired seals, driven this morning, and released from the pods into the Lagoon slough and from there direct into the sea—where do they go? Do they haul up again? Yes, everybody says so, and I do not know anything to the contrary, and much in affirmation. Then, that being so, these seals spared to-day may be driven to-morrow from Zoltoi Bluffs, to be spared again and driven next week, and so on all over through the season. What indication, truthful one, have we of what number of fresh holluschickie really arrive from this time forth, if these released seals are to continually present themselves, as they do? So, as matters go, the steady increase daily of discarded seals, together with the fresh or new arrivals, are driven day after day over and over again throughout the killing season.

Then, in 1872-1874, this proportion of rejected or "turned away" seals from all the drives up to the 1st of July was not over 10 or 12 per cent of the whole drove driven; now it is 80 and 90 per cent of this number—yearlings, that do require six years of rest ere they are fit for rookery service. This is the status at the present moment on the killing grounds right in the very height of the best hour for sealing in the whole season; and this, too, must be considered in the light of the positive declaration of the natives that this repeated driving renders the spared males wholly unfit for rookery service—breaks down their nerve.

How many of these released seals this morning have been driven over that road before this season? On the 17th, the last drive prior to this one to-day, from Middle Hill and Tolstoi was made, 70 per cent of that drove was turned away; and now, to-day, the same drive is made over again, after an interval of six days' rest of the ground, and 80 per cent is turned away. I shall observe the next drive very closely as it comes in from Middle Hill and Tolstoi. At this rate of increase of rejection, where will the driving be in July, when the yearlings begin to haul in bodies?

JUNE 24, 1890.

A drive this morning at 5.50 from the Zoltoi bluffs of about 500, all told, and another "pod" from the reef, some 750, coming. Yesterday morning at 7 o'clock, there was not a single holluschickie under Zoltoi bluffs; but, in less than three hours after the killing began on the Lagoon flats, and the turning out there of 80 per cent of all that Middle Hill drive, I observed holluschickie hauling under those bluffs at Zoltoi, and a few on the sands, the first that have hauled there this year. Now, the query enters my mind. Were any of these spared seals of yesterday, hauling up at Zoltoi yesterday? Look at the map and observe the significance of the surroundings. Everybody in 1872, and everybody to-day, admits that these seals which are released from the drives haul up again, are driven over again: released once more, and still driven again and again throughout the season.

In 1872 on this St. Paul village ground a 5-year-old bull was pointed out to me by Chief Booterin, which was marked by some curious pink-white mottles on its dark fore flippers. Booterin said to me that that "polseecatch" had been driven up in this way already, twice from the hauling grounds, and this made its third trip since the season opened. It was not noticed in any of the subsequent drives. It may have gone over to St. George in disgust, or have hauled at Zapadni, at Southwest Point, Polavina, Tonkie Mees, where at any one of these resorts at that date, it would have remained in peace: for, no seals were then driven from any of these points; or it may have gone to Northeast Point and exhibited itself to Webster and his men; and again, this last drive above noted may have so enfeebled it as to cause its subsequent death at sea.

That these "half bulls" or "polseecatch" thus driven in 1872 should not attempt then to land on the rookeries was not surprising. They simply could not, for the crowds of old and virile bulls stationed there, never let them. But to-day, where there are wide gaps in the water lines and above these breeding bulls, *why is it that these "half bulls," in these drives to-day, (5 and 6 year olds) do not ever attempt to go there now, where there is no sign of opposition?* It is remarkable. The statement made by the natives in 1834-35, and to-day, that this driving renders them unfit for breeding, is the only solution.

"Polseecatch," or half bull; name given by natives to all fur-seal males over 4 and under 7 years of age.

At 7 a. m. I went down to the killing grounds and followed the podding and clubbing of the entire drive as brought up from the Reef crest and Zoltai bluffs early this morning. The Zoltai pod arrived on the ground long before the Reef pod—two hours sooner. It was made up largely of "polseeatchie" and yearlings—the oldest bulls thus far of the season, 6 and 7 year olds: and in this drive were many bulls which the natives said, as they pointed them out, had come over from the Lagoon killing yesterday; they knew the individuals by certain clubbing marks, etc.

The seals turned aside this morning were exclusively yearlings and "short" 2-year-olds, and a large number of "half bulls." No "long" 2-year-old escaped; so, therefore, many 5½ and 6 pound skins will appear in this catch. There was, however, a notable absence of 2-year-olds in proportion to the number driven, and the bulk of the catch was 3 year-olds, as was yesterday's killing, with a very large number of 4-year-olds in proportion for the small number of skins secured. A few cows appeared in the drive; two of them were rookery cows, and two or three were what I called "barren females" in 1872-1874. It is impossible, as the driving is now conducted, to avoid getting a few cows in the herd, since nearly two-thirds of that drive this morning came from the breeding lines on the Reef crest. Driving thus from the close proximity of breeding lines was not done in 1872-1874; and then, too, I never saw such an extraordinary number of 6-year-old bulls driven up here, before. True it was that in 1872 great numbers of these vagrants, or whipped bulls, were to be seen on the hauling grounds then: yet the natives could and did "walk them out" at the start, so, very few of them came along in the drive. I have often watched them cut out these large young bulls and any older ones from the drives as they started from English Bay or Lukannon. They don't do it now; they are afraid to lose a single eligible seal.

JUNE 27, 1890.

In 1872-1874 very little attention was paid to driving seals until the 12th or 14th of June. True it was, that bands of thousands of holluschickie were then many days long before that date, hauled out on the several resorts: yet then, because these animals were not in greater numbers, and were nearly all of them down by the surf margin, it was deemed best to wait until the 12th or 14th before beginning in earnest to drive. But, after the 11th of June usually there was such an abundant supply of holluschickie on hand within 1½ miles of this village, and from the salt house at Northeast Point, that no concern was ever given as to the number that they could get—it was the number that they should get (just the other way from the present condition and desire)—for if it was a warmish, dry day in 1872, then only a small drive, so as to get some 1,200 or 1,500 skins, was made. If it was a cool, favorable day, then the driving would be so ordered as to bring in some 2,500 or 3,000 skins, which was about the utmost number that they could handle at the village in those times, per diem, under the most favorable circumstances.

How different now! eighteen years since the above-cited order of affairs on this ground. By the 6th of June the most eager, energetic driving began simultaneously with the arrival of each and every squad of holluschickie, and has been kept up ever since; but up to the 11th of June these drives were nothing better than "food drives," so scant was the supply of killable seals.

JUNE 28, 1890, 5 a. m.

The superb sealing weather still continues. The natives are bringing up a small squad from the Reef (some 1,300) as I write. Not a single seal on the sands of Zoltai this morning, nor has there been one since the last drive, 24th instant, or any prior to that this season. This is remarkable—most remarkable. This squad of holluschickie driven up from the Crest, when released from the several pods on the killing grounds adjacent to Zoltai, went directly to the sea over by Gull Hill, then headed back for the Reef Point—a few for Ketavie, and many of the "half bulls" actually hauled out under Gull Hill and Grassy Summit in less than an hour after their release from the driven herd, in which they formed quite a large element this morning.

As these field notes of my daily investigation last summer appear *seriatim* and *in extenso* in Section VIII, following, I will make but one more quotation in this connection illustrative of the utter failure of the supply of killable seals over 1 year old on these islands to-day.

JUNE 30, 1890.

The shameful significance of this day's work can be seen by the most casual observer. I counted over twenty-four "moon-eyed" or blind or semiblind holluschickie as they escaped in the several "zupooskas," all of which have been crippled in this manner this season by the effects of prior driving! How many of these yearlings and "short" 2-year-olds that were released this morning, will again be driven before the season is over? Nearly all of them. They pass from the pods into the sea over the Lagoon bar; they meet squadrons of cows playing and lolling in the water around the rookeries; they pause, listen, and join in the general comfort which the water certainly affords them; and, as the females and fresh arrivals of their own

sex haul out on land, these unfortunate seals are beguiled again very soon, or a few days later, into that deadly procession to that ground from which they were driven early this morning. How the significance—the death of this driving—now keeps rising to my mind. I had little occasion in 1872-1874 to give it thought: and, what I did then was only in a suggestive mood.

I passed up from the killing grounds over to Tolstoi rookery, and gave the seal path or road, a careful review. A few holluschickie were again hauled out under Middle Hill, and a dozen, perhaps, on the Tolstoi rookery sand intersection: but, the great hauling grounds of English Bay are utterly destitute of seal life at the hour of this writing: and have been so ever since the season opened, with the marked exception of those small squads under Middle Hill, in the rear of Nealpaliskie Kammen, and the sand beach at the immediate ending of the Tolstoi breeding lines. These microscopic areas are the only points now in all that vast extent of ground over which in 1872-1874 the holluschickie of English Bay spread their heavy squadrons!

Not a holluschickie on Zoltai sands to-day, and only a handful on the rocks beyond and above, from which the Zoltai drives, so called, have all been thus far. Mr. Goff assures me that there was no driving from the sands here last year—it was all from these rocks above the Zoltai bluffs. When this famous hauling ground began to fail was full time for its a note of warning to have been heard. When did it fail?

From the journals of the Treasury agent's office on St. Paul and St. George islands, I have extracted the following data, which declares plainly enough that until the season of 1885 closed, the annual quota of 100,000 prime skins was easily taken on these islands between the 1st and 14th of June and the 20th of July; that in 1885, the work suddenly dropped behind, and continued to lag until the total failure of 1890 closes this sad record:

Table showing dates of the first and last killings of each official sealing season on the Pribilof Islands.

[The season of 1890 closed on the 20th of July by order of the Secretary of the Treasury.]

Year.	Island of St. Paul.		Island of St. George.	
	First killing.	Last killing.	First killing.	Last killing.
1870 <i>a</i>				
1871.....	May 16	July 31	June 4	<i>b</i> July 31
1872.....	June 1	<i>c</i> July 30	June 3	July 27
1873.....	.....do.....	<i>d</i> July 24	June 4	July 28
1874.....	June 3	<i>e</i> July 28	June 1	July 27
1875.....	June 1	July 22	.....do.....	July 17
1876.....	June 6	July 19	.....do.....	July 7
1877.....	June 4	July 18	June 9	July 10
1878.....	June 8	.....do.....	June 10	July 21
1879.....	June 2	July 16	June 3	<i>f</i> July 16
1880.....	June 3	July 17	.....do.....	July 9
1881.....	June 6	July 20	June 9	July 16
1882.....	June 2	.....do.....	June 12	<i>g</i> July 19
1883.....	June 4	July 19	June 11	July 31
1884.....	June 2	July 21	June 4	Aug. 4
1885.....	June 3	July 27	June 1	July 27
1886.....	June 2	July 26	June 10	July 23
1887.....	June 6	July 27	June 9	July 22
1888.....	June 2	July 23	June 6	July 27
1889.....	June 5	July 31	June 4	July 29
1890.....	June 6	July 20	June 2	July 20

a No record.

b Delayed for "food drives" after 22d.

c The catch of 75,000 was substantially taken on July 17. A few thousand skins left for food driving until 30th.

d The catch of 75,000 was substantially taken by the 20th. A few thousand skins left for food driving until the 24th.

e The catch of 90,000 was substantially taken on the 16th of July; but a few thousand skins for food driving were left over to the 28th.

f This season's work covers the first draft made upon the reserves.

g Heavy draft begun this year upon the reserves.

*Official entries in the journal of the chief special agent of the Treasury Department, at St. Paul Island, relative to the close of the sealing seasons on that island since 1879, the year of first hint of diminution:*¹

July 14, 1879.—Drive from Zoltai, 2,652 skins taken.

July 16, 1879.—Last day of the sealing season. Drive from Middle Hill making up the full quota for this island. The natives round up the sealing with a yell. (H. G. Otis, p. 99.)

¹ See detailed statement in Appendix p. 218.

July 17, 1880.—Drive from Zoltoi, the last drive of the regular season, making up the full quota, 80,000. (H. G. Otis, p. 181.)

July 20, 1881.—Drives from Tolstoi, Zoltoi, Ketavie, and Lukannon, the last of the regular sealing season, 2,530 skins taken, filling the islands' quota of 80,000. (H. G. Otis, p. 231.)

July 20, 1882.—The seals killed to-day fills the quota of 1882; total killed, 81,510. (H. A. Glidden, p. 268.)

July 19, 1883.—This entry closes the sealing season. (H. A. Glidden, p. 305.)

July 21, 1884.—To-day's killing closes the sealing season of 1884; total killed, 88,951. (H. A. Glidden, p. 347.)

July 27, 1885.—The Alaska Commercial Company made a final drive from Zoltoi Reef and Middle Hill, and killed 983, which closes the season's quota, making in all 99,996. (G. R. Tingle, p. 379.)

July 26, 1886.—The Alaska Commercial Company completed the season's killing to-day, securing the full quota for this island, viz, 85,000. (G. R. Tingle, p. 449.)

July 12, 1887.—Alaska Commercial Company killed and salted 4,812 skins.

July 13, 1887.—Alaska Commercial Company killed and salted 4,958 skins. The last two killings are the largest for years in a single day.

July 23, 1887.—Alaska Commercial Company made a drive at Southwest Bay to close the season. (G. R. Tingle, p. 13.)

July 27, 1888.—The sealing season closed to-day, completing the full quota of 100,000, being 85,000 for this and 15,000 for St. George Island. (G. R. Tingle, p. 76.)

July 31, 1889.—The season closed to-day, the full quota being secured for this island (85,000). (C. J. Goff.)

The foregoing statements of fact, declare that the first breakdown from the regular time, July 20, of getting the whole catch since 1870, took place in 1885: then it fell suddenly to the 27th of July: rallied a little in 1887, but fell back again in 1888, and down to the bottom in 1889. This season of 1890 never had a real beginning, if a comparison of the seals killed daily since it opened, is made with the daily record of any of the preceding twenty years.

The custom on both islands, in driving, of combining the herds from several localities into one drive as it is brought upon the killing grounds, makes a direct comparison, between years, of the catch taken from any one hauling ground, very difficult: indeed, incorrect if attempted.

But there are two localities, Northeast Point of St. Paul and Zapadni, on St. George Island, where there is no opportunity to merge any other seals driven except those found there alone. This makes the following contrast, between the work of 1889 and 1890, very direct and honest:

Daily record of seals taken at Novastoshak, seasons of 1889-90.

Date.	1889— num- ber of skins.	1890— num- ber of skins.	Skin grade; nothing under.		Date.	1889— num- ber of skins.	1890— num- ber of skins.	Skin grade; nothing under.	
			1889.	1890.				1889.	1890.
			Pounds.	Pounds.				Pounds.	Pounds.
June 17.....	1,054	16	6	7	J 6.....	376	.....	6	5½
18.....	1,270	78	6	7	7.....	.....	336	6	5½
19.....	494	.....	6	7	8.....	914	378	6	5½
20.....	.....	458	6	7	9.....	641	271	6	5½
21.....	1,205	96	6	7	10.....	800	112	6	5½
22.....	.....	176	6	7	13.....	793	641	6	5½
24.....	754	202	6	7	15.....	1,838	245	5	5½
25.....	1,407	164	6	7	16.....	1,156	311	5	5½
26.....	441	.....	6	7	17.....	948	485	5	5½
27.....	844	225	6	7	18.....	1,282	405	5	5½
28.....	479	79	6	7	19.....	834	446	5	5
29.....	355	.....	6	7	20 a.....	243	464	5	5
30.....	.....	97	6	7					
Total.....	8,403	1,601	.....	.....	Total.....	15,076	4,890	.....	.....
July 1.....	1,200	130	6	7	July 22.....	350	.....	5	.....
2.....	968	96	6	7	23.....	740	.....	5	.....
3.....	.....	180	6	7	24.....	610	.....	5	.....
4.....	1,559	318	6	5½	26.....	1,433	.....	5	.....
5.....	1,524	74	6	5½	29.....	1,625	.....	5	.....
					31.....	938	.....	5	.....

a Season closed for 1890 by order of the Secretary of the Treasury.

The contrast thus clearly drawn between the work at Northeast Point last year, and this season of 1890, tells its own story. Down on the killing grounds at the village of St. Paul, the general manager, in 1889 became alarmed at the prospect of failure to get the season's quota of 100,000 for both islands. He accordingly lowered, on the 13th of July, the standard from a 6-pound skin to a 4½-pound skin, thus taking in all the "long" yearlings and everything above to the 5-year olds. But Webster, then at Northeast Point, stubbornly refused to kill anything under a "short" 2-year-old or 5-pound skin.

At the village, however, over 20,000 of these "long" yearlings were knocked down, and taken after the 13th of July, 1889. That enabled the shipment of that season's quota of 85,000 skins from St. Paul after the 31st July.

Daily record of seals taken at Zapadnie, St. George Island, seasons of 1889-90, between the 10th of June and 20th of July.

Date.	1889— num- ber of skins.	1890— num- ber of skins.	Skin grade; nothing under.		Date.	1889— num- ber of skins.	1890— num- ber of skins.	Skin grade; nothing under.	
			1889.	1890.				1889.	1890.
			<i>Pounds.</i>	<i>Pounds.</i>				<i>Pounds.</i>	<i>Pounds.</i>
June 10.	207		6	7	July 12.	192		6	7
17.	244		6	7	14.	53		6	7
20.		394	6	7	15.	371		6	7
24.	595		6	7	18.	439		6	7
27.	223	189	6	7	20.		527	6	5
Total.	1,269	583			Total.	1,498	635		
July 1.	167		6	7	July 22.	500		6	
7.		58	6	7	25.	279		6	
8.	229		6	7	28.	568		6	

The following are extracts from the journal of the Treasury agent, St. Paul Island, showing the dates of the first regular drafts made upon the reserved male life at Zapadnie (Southwest Bay) and Polavina.¹ These dates also declare the time of that exhaustion in part, of the regular sources of hitherto abundant supply at Tolstoi, Middle Hill, Lukanon, and Zoltoi:

June 9, 1879.—Antone Meloviedov started with a gang to make a drive at Halfway Point. (P. 92.)

June 10, 1879.—The drive to-day (at Polavina) resulted in the taking of 1,118 skins. (H. G. Otis, p. 93.)

June 11, 1879.—Drive made from Southwest Bay (Zapadnie) to-day and 1,462 skins taken. (H. G. Otis, p. 93.)

In this connection I am able to say that I personally observed, in 1872, the origin and progress of every St. Paul Island drive made up to the village killing grounds; and again, Lieutenant Maynard and myself followed the record of every drive made on both islands during the killing season of 1874. "Middle Hill" had no name—was not known to the whites as such in those days. Everything then westward beyond it, Tolstoi and English Bay hauling grounds, beginning at "Nearhpahskie Kammen," or "hair-seal rocks," was called "Zapadnie" by both whites and natives when alluding to that region. The "English Bay" drives were all made from someways beyond the breeding Tolstoi seals, where the holluschickie hauled out on what is now generally recognized as the "Middle Hill" grounds.

From this day on to the close of that sealing season's work, July 20, Zapadnie was driven often, and Polavina also. But in 1880 only one

¹ See detailed statement, Appendix, p. 195-197.

drive was made from this reservoir at Zapadnié, that on the 7th of June, in which 1,496 skins were taken. And again in 1881 it was not driven from at all: but ten drives that year were made from the Polavina reserve, beginning on the 10th of June, in which 474 skins were taken.¹

But, in 1882 the draft began in earnest; and it has never ceased up to the end of the present season of 1890.

The work of rapid depletion of the seal life on the hauling grounds of the Pribilof Islands takes its origin at the beginning of this season of 1882. The following citations from the Treasury agent's journal on St. Paul Island show the suddenness, the regularity, and the frequency of these heavy drafts of 1882 upon that surplus male life which was wholly undisturbed by man in 1872-1874.

June 2, 7, and 12, 1882, drives made from Southwest Bay, etc. June 13, 1882, drive made from Polavina, etc. June 17 and 20, 1882, drives made from Southwest Bay, etc. June 23, 1882, drive made from Polavina, etc. June 26 and 27, 1882, drives made from Southwest Bay, etc. June 30, 1882, drive made from Polavina, etc. July 3, 1882, drive made from Southwest Bay, etc. July 8, 1882, drive made from Polavina, etc. July 13 and 20, 1882, drives made from Southwest Bay, etc.

Season closed on the 20th; the full quota then taken of 85,000 for St. Paul.

And another feature of this draft is that the skins taken from these reserves were all large skins—*nothing under 3 and 4 year olds*, or $7\frac{1}{2}$ to 12 pound skins, until the end was reached in 1889, by the 31st of July.

¹ See detailed statement, Appendix, p. 217, 218.





A drawing from nature by the author.

THE NORTH SHORE AND THE VILLAGE, SAINT GEORGE ISLAND, JULY 19, 1890.

View looking west, over the killing grounds, the village hill, to the High Bluffs and Dahoo Mees; the anchorage of the vessels, and the landing, salt houses on the beach, etc.

SECTION V.

CHARACTER, CONDITION, AND NUMBER OF NATIVES OF THE PRIBILOV ISLANDS IN 1872, 1874, AND 1890.

WHAT CONSTITUTES A NATIVE.

There has been some divergence of opinion on the islands as to who are the real "natives" thereof, because these natives enjoy certain privileges that are very valuable to them, and coveted by all outside Alaskan brethren.

In this connection, the people, living here, are divided into three classes—that is, the males:

First. The natives, properly speaking, or those who have been born and raised upon the Pribilov Islands. Not over one-tenth of the present adult population can lay claim to this title.

Second. The people who were living thereon, but not born natives at the time of the transfer of all Alaska, July, 1867. This class constitutes a majority of the citizens of the two islands as they exist to-day.

Third. The people who were living and working as sealers on the Pribilov Islands at the date of the granting by the Government of the present lease to the Alaska Commercial Company, August 3, 1870.

Of the above three divisions, strict justice and true equity unite in recognizing the third class as the "natives" of the Pribilov Islands. This settles the question also to the best satisfaction of these people themselves, and removes every quibble of dispute in the premises. Accurate records of the men, women, and children living on each island at the date of the lease in 1870, can be found in the church registers on both St. Paul and St. George.

According to Bishop Veniaminov, the inhabitants of the Pribilov Islands belonged to the parish of Oonalaska, the priest of which was obliged to visit them once every two years (to marry, baptize, etc.). These islands were not known before the year 1786. Mate G. Pribilov, then in the service of the Leybedev company, first, in the Russian name, found them: but at the same time he was not the first discoverer, because, as the Bishop says, in his account, (Part I, chapter 1),¹ on one of them (southwest side of St. Paul) signs such as a pipe, brass knife handle, and traces of fire were found, indicating that people had been there before, but not long, as places were observed where the grass had been burned and scorched. But if we can believe the Aleuts in what they relate the islands were known to them long before they were visited by the Russians. They knew and called them "Ateek," after having heard about them.

When Pribilov, in taking possession, landed on St. George a part of his little ship's crew, July, 1786, he knew that, as it was uninhabited, it would be necessary to create a colony there, from which to draft laborers to do the killing, skinning, and curing of the peltries. Therefore he and his associates, and his rivals after him, imported natives

¹ Zapieska ob Ostrovali Oonalashkenskaho Otdayla. St. Petersburg, 1842, Pt. I, chap. 1.

of Oonalaska and Atkha—passive, docile Aleuts. They founded their first village a quarter of a mile to the eastward of one of the principal rookeries on St. George, now called Starry Arteel, or Old Settlement. A village was also located at Zapadnie, and a succession of barraboras planted at Garden Cove. Then, during the following season, more men were brought up from Atkha and taken over to St. Paul, where five or six rival traders posted themselves on the north shore near and at Maroonitch, and at the head of the Big Lake, among the sand dunes there.

They were then, as they are now, somewhat given to riotous living if they only had the chance: and the ruins of the Big Lake settlement are pleasantly remembered by the descendants of those pioneers to day on St. Paul, who take off their hats as they pass by, to affectionately salute and call the place "Vesolia Mista," or "Jolly Spot." The elder men told me, with great unction, that "in those good old days they had plenty of rum." But, when the pressure of competition became great, another village was located at Polavina, and still another at Zapadnie, until the activity and unscrupulous energy of all these rival settlements well-nigh drove out and eliminated the seals in 1796. Three years later, the whole territory of Alaska passed into the hands of the absolute power vested in the Russian-American Company. These islands were in the bill of sale, and early in 1799 the competing traders were turned off neck and heels from them, and the Pribilof group passed under the control of a single man—the iron-willed Baranov. The people on St. Paul were then all drawn together, for economy and warmth, into a single settlement at Polavina. Their life in those days must have been miserable. They were mere slaves, without the slightest redress from any insolence or injury which their masters might see fit, in petulance or brutal orgies, to inflict upon them. Here they lived and died, unnoticed and uncared for, in large barracoons half under ground and dirt roofed, cold and filthy. Along toward the beginning or end of 1825, in order that they might reap the advantages of being located best to load and unload ships, the Polavina settlement was removed to the present village site, as indicated on the map, and the natives have lived there ever since.

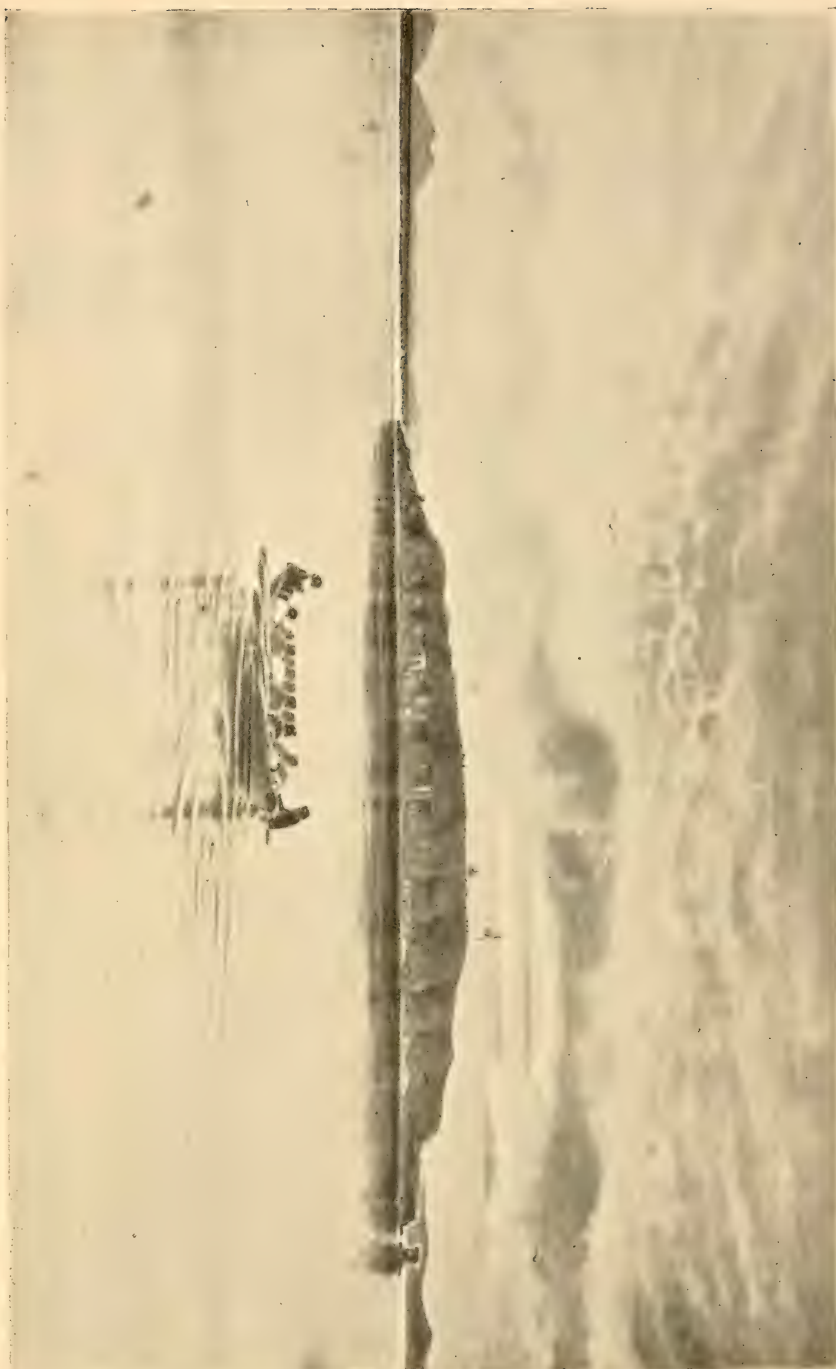
On St. George, the several scattered villages were abandoned and consolidated at the existing location some years later, but for a different reason. The labor of bringing the seal skins over to Garden Cove, which is the best and surest landing, was so great; and that of carrying them from the north shore to Zapadnie, still greater: so, it was decided to place the consolidated settlement at such a point between them on the north shore that the least trouble and exertion of conveyance would be necessary. A better place, geographically, for the business of gathering the skins and salting them down at St. George, can not be found on that island, but a poorer place for a landing it is difficult to pick out: though in this respect there is not much choice outside of Garden Cove.

The Aleutian stock on the islands, as it appears to day, has been so mixed up with Russian, American, and Kamschadale blood, that it presents characteristics, in one way or another, of all the various races of men, from the negro up to the Caucasian. The predominant features among them are small, wide-set eyes: broad and high cheek bones, causing the jaw, which is full and square, to often appear peaked; coarse, straight black hair: small, neatly shaped feet and hands, together with brownish yellow complexion. The men will average in stature 5 feet 4 or 5 inches: the women less in proportion, although there are exceptions to this rule among them, some being over 6 feet in height

A drawing from nature by the author.

POLAVINA SOPKA.

THE VILLAGE COVE.



THE VILLAGE HILL FROM THE STEAMER'S ANCHORAGE OFF THE COVE, SAINT PAUL ISLAND.

Natives and bidarra lightening the ship's cargo, April 20, 1872.

[To-day a steamer hauled towed these lighters back and forth between the ship and the village landings.]

ZOUTOI BAY.

and others are decidedly dwarfish. The manners and customs of these people to-day possess nothing in themselves of a barbarous or remarkable character aside from that which belongs to an advanced state of semicivilization.

They are exceedingly polite and civil, not only in their business with the agents of the Government and the company on the seal islands, but among themselves; and they visit, the one with the other, freely and pleasantly, the women being great gossips. But, on the whole, their intercourse is subdued, for the simple reason that the topics of conversation are few: and judging from their silent but unconstrained meetings, they seem to have a mutual knowledge, as if by sympathy, as to what may be occupying each other's minds, rendering speech superfluous. It is only when under the influence of beer or strong liquor that they lose their naturally quiet and amiable disposition. They then relapse into low, drunken orgies and loud, brawling noises. Having been so long under the control and influence of the Russians, they have adopted many Slavic customs, such as giving birthday dinners, naming their children, etc. They are remarkably attached to their church, and no other form of religion could be better adapted or have a firmer hold upon the sensibilities of the people. Their inherent chastity and sobriety can not be commended. They have long since thrown away the uncouth garments of the Russian rule—the shaggy dogskin caps, with coats half seal and half sealion—for a complete outfit, *cap-à-pie*, such as our own people buy in any furnishing house: the same boots, socks, underclothing, and clothing, with ulsters and ulsterettes. But the violence of the wind prevents their selecting the hats of our *haut ton* and sporting fraternity. As for the women, they, too, have kept pace and even advanced to the level of the men, for in these lower races there is much more vanity displayed by the masculine element than the feminine, according to my observation. In other words, I have noticed a greater desire among the young men than among the young women, of savage and semicivilized people, to be gayly dressed and to look fine.

But the visits of the wives of our Treasury officials and the company's agents to these islands during the last twenty years, bringing with them a full outfit, as ladies always do, of everything under the sun that women want to wear, has given the native female mind an undue expansion up there, and stimulated it to unwonted activity. They watch the cut of the garments and borrow the patterns: and some of them are very expert dressmakers to-day. When the Russians controlled affairs the women were the hewers of the driftwood and the drawers of the water. At St. Paul there was no well of drinking fluid about the village, nor within half a mile of the village; there was no drinking water unless it was caught in cisterns, and the cistern water, owing to the particles of seal-fat soot which fall upon the roofs of the houses, is rendered undrinkable; so that the supply for the town, until quite recently, used to be carried by the women from two little lakes at the head of the Lagoon, a mile and a half, as the crow flies, from the village, and right under Telegraph Hill. This is quite a journey: and when it is remembered that they drink so much tea, and that water has to go with it, some idea of the labor of the old and young females can be derived from an inspection of the map. Latterly, within the last fourteen years, the company opened a spring, less than half a mile from the "gorode," which they have plumbed and regulated, so that it supplies them with water now, and renders the labor next to nothing, compared with the former difficulty. But to-day, when water is wanted in the Aleutian

houses at St. Paul, the man often has to get it. He trudges out with a little wooden firkin or tub on his back, and brings it to the house.

The fact that among all the savage races found on the northwest coast by Christian pioneers and teachers, the Aleutians are the only practical converts to Christianity, goes far, in my opinion, to set them apart as very differently constituted in mind and disposition from our Indians and our Eskimos of Alaska. To the latter, however, they seem to be intimately allied, though they do not mingle in the slightest degree. They adopted the Christian faith with very little opposition, readily exchanging their barbarous customs and wild superstitions for the rites of the Greek Catholic Church and its more refined myths and legends.

At the time of their first discovery they were living as savages in every sense of the word, bold and hardy, throughout the Aleutian chain: but, now they respond on these islands to all outward signs of Christianity as sincerely as our own church-going people.

Up to the time of the transfer of the territory and leasing of the islands to the Alaska Commercial Company, in August, 1870, these native inhabitants all lived in huts or sod-walled and dirt-roofed houses, called "barrabkies," partly under ground. Most of these huts were damp, dark, and exceedingly filthy. It seemed to be the policy of the short-sighted Russian management to keep them so, and to treat the natives not near so well as they treated the few hogs and dogs which they brought up there for food and for company. The use of seal fat for fuel caused the deposit upon everything within doors, of a thick coat of greasy, black soot, strongly impregnated with a damp, moldy, and indescribably offensive odor. They found along the north shore of St. Paul and at Northeast Point occasional scattered pieces of driftwood, which they used, carefully soaked anew in water if it had dried out, split into little fragments, and, trussing the blubber with it when making their fires, the combination gave rise to a roaring, spluttering blaze. If this driftwood failed them at any time when winter came round, they were obliged to huddle together beneath skins in their cold huts, and live or die, as the case might be. But the situation to day has changed marvelously.

When Congress granted to the Alaska Commercial Company of San Francisco the exclusive right of taking a certain number of fur seals every year for a period of twenty years on these islands, it did so with several reservations and conditions, which were confided in their detail to the Secretary of the Treasury. This officer and the president of the Alaska Commercial Company agreed upon a code of regulations which should govern their joint action in regard to the natives. It was a simple agreement that these people should have a certain amount of dried salmon furnished them for food every year: a certain amount of fuel: a schoolhouse, and the right to go to and come from the islands as they chose; and also the right to work or not, understanding that in case they did not work, their places would and could be supplied by other people who would work.

The company, however, went far beyond this exaction of the Government. It added an inexpressible boon of comfort, in the formation of those dwellings now occupied by the natives, which was neither expressed nor thought of at the time of the granting of the lease. An enlightened business policy suggested to the company that it would be much better for the natives, and much better for the company too, if these people were taken out of their filthy, unwholesome hovels, put into habitable dwellings, and taught to live cleanly, for the simple reason

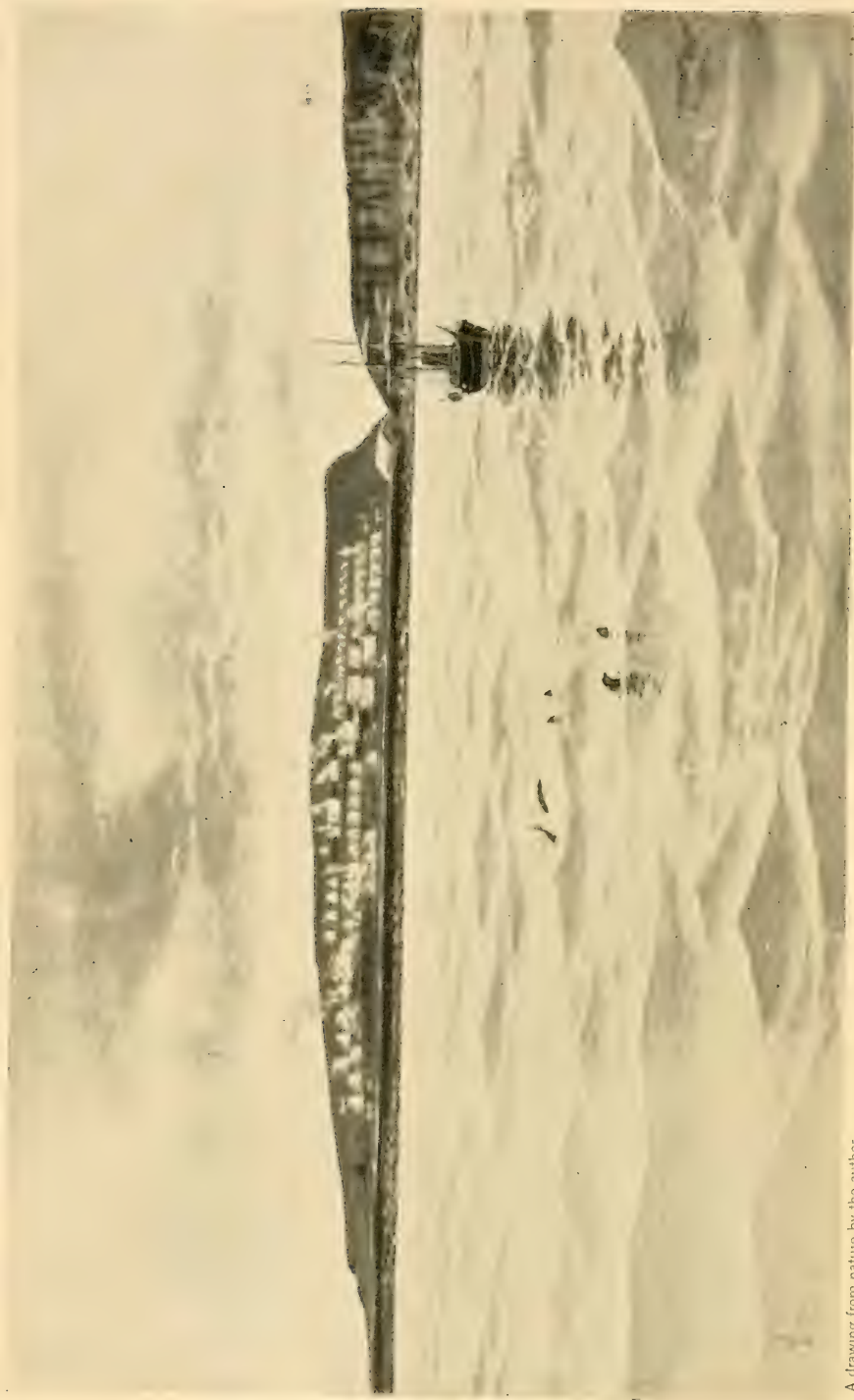


A drawing from nature by the author

THE VILLAGE COVE AND LANDING, SAINT PAUL ISLAND, OCTOBER 22, 1872.

The Treasury agent's house on the hill just finished; the old Russian church, with houses, store, etc., the barracks of the natives not replaced by the frame dwellings to any extent at this date.





GEORGE H. R. FEN

EAST LANDING
THE VILLAGE OF SAINT PAUL, SAINT PAUL ISLAND, AUGUST 9, 1890.
Viewed from the anchorage at the east landing.

A drawing from nature by the author.

that by so doing, the natives, living in this improved condition, would be able physically and mentally, every season when the sealing work began, to come out from their long inanition and go to work at once with vigor and energetic persistency. The sequel proved the wisdom of the company.¹

Many experiments, however, were made and a dozen houses built ere the result was as good as the style of primitive housing, when it had been well done and kept in best possible repair. In such a damp climate, naturally, a strong moldy smell pervades all inclosed rooms which are not thoroughly heated and daily dried by fires; and in the spring and fall frost works through and drips and trickles like rain adown the walls. The present frame houses occupied by the natives owe their dryness, warmth, and protection from the piercing "boorgas," to the liberal use of stout tarred paper in the lining. The overpowering mustiness of the hallways, outhouses, and, in fact, every roofed-in spot where a stove is not regularly used, even in the best-built residences, is one of the first disagreeable sensations which the new arrivals always experience when they take up their quarters here. Perhaps if it were not for the nasal misery that floats in from the killing grounds to the novice, this musty, moldy state of things up here would be far more acute as an annoyance than it is now. The greater grief seems to soon fully absorb the lesser one; at least in my own case I can affirm that result.

We see here now at St. Paul and on St. George, in the place of the squalid, filthy habitations of the immediate past, two villages, neat, warm, and contented. Each family lives in a snug frame dwelling. Every house is lined with tarred paper, painted, furnished with a stove, with outhouses, etc., complete; streets are laid out, and the foundations of these habitations regularly platted thereon. There is a large church at St. Paul and a less pretentious but very creditable structure of the same character on St. George. A pharmacy on St. Paul, with a full and complete stock of drugs, and skilled physicians on both islands to take care of the people free of cost. There is a schoolhouse on each island, in which teachers have been paid by the company eight months of every year to instruct the youth, while the Russian Church is sustained entirely by the pious contributions of the natives themselves on these two islands, and sustained well by each. There are 63 family houses on St. Paul in the village, with 20 or 24 such houses to as many families on St. George, and 18 other structures. The large warehouses and salt sheds, built by the Alaska Commercial Company's skillful mechanics, as have been the dwellings just referred to, are also neatly painted, and, taken in combination with the other features, constitute a picture fully equal to the average presentation of any one of our small eastern towns. There is no misery, no downcast, dejected, suffering

¹ Before this action on their part it was physically impossible for the inhabitants of St. Paul or St. George islands to take the lawful quota of 100,000 seal skins annually in less than three or four working months. They can take them in less than thirty working days now with the same number of men. What is the gain? Simply this, and it is everything: The fur seal skin, from the 14th of June, when it first arrives, as a rule, up to the 20th of July, is in prime condition. From that latter date until the middle of October it deteriorates, to slowly appreciate again in value as it sheds and renews its coat; so much so, that it is practically damaged in the markets of the world. Hence the catch taken by the Alaska Commercial Company every year was a prime one, first to last; there were no low-grade or "stagey" skins in it. Under the old regimen three-fourths of the skins were taken in August, in September, and even in October, and many such were not worth their transportation to London. Comment on this is unnecessary. It is the contrast made between a prescient business policy and one that was as shiftless and improvident as language can well devise.

humanity here to-day. These Aleuts, who have enjoyed as the price of their good behavior the sole right to take and skin seals for the company, to the exclusion of all other people, are known to and by their less fortunate neighbors elsewhere in Alaska as the "bogatskie Aloutov," or the "rich Aleuts." The example of many of the agents of the Alaska Commercial Company on both islands, from the beginning of its lease, and the course of some of the Treasury agents during the last twenty years have been silent but powerful promoters of the welfare of these people. They have maintained perfect order. They have directed neatness and cleanliness, and stimulated industry such as those natives had never before dreamed of, and have enforced sobriety.

The agents of the Government and the company found so much difficulty at first in getting the youth of the villages to attend their schools, taught by our own people, especially brought up there and hired by the company, that they adopted the plan of bringing one or two of the brightest boys down every year and putting them into our schools, so that they might grow up here and be educated in order to return and serve as teachers there. This policy is warranted by the success attending the experiment made at the time when I was up there first, whereby a son of the chief was carried down and over to Rutland, Vt., for his education, remained there four years, and then returned and took charge of the school on St. Paul, which he served (until his death) with the happiest results in increased attendance and attention from the children. But, of course, so long as the Russian Church service is conducted in the Russian language we will find on the islands more Russian-speaking people than our own. The nonattendance at school was not and is not to be ascribed to indisposition on the part of the children and parents. One of the oldest and most intelligent of the natives told me, explanatory of their feeling and consequent action, that he did not nor did his neighbors have any objection to the attendance of their children on our English school; but if their boys and young men neglected their Russian lessons, he knew not who were going to take their places when they died in his church, at the christenings, and at their burial. To anyone familiar with the teachings of the Greek-Catholic faith, the objection of old Philip Volkov seems reasonable. I hope, therefore, that in the course of time the Russian Church service may be voiced in English; not that I want to substitute any other religion for it—far from it. In my opinion it is the best one we could have for these people; but until this substitution of our language for the Russian is made, no very satisfactory work, in my opinion, will be accomplished in the way of an English education on the seal islands.

As they are living to day up there, there is no restraint, such as the presence of policemen, courts of justice, fines, etc., which we employ for the suppression of disorder and maintenance of the law in our own land. They understand that if it is necessary to make them law abiding, and to punish crime, that such officers will be among them; and hence perhaps, is due the fact that from the time that the Alaska Commercial Company's lease was made, in 1870, there has not been one single occasion where the simplest functions of a justice of the peace would or need have been called in to settle any difficulty. This speaks eloquently for their docile nature and their amiable disposition. Surprise has often been genuine among those who inquire over the fact that there is no law officer here at either village, and wonder is expressed why such provision is not made by the Government. But, when the following facts relative to this subject are understood, it is at once clear that a justice of the peace and his constabulary would be entirely useless, if





PENCIL SKETCHES OF THE SEAL ISLAND NATIVES ON SAINT PAUL ISLAND, 1872.

[Made by the author December, 1872.]

Typical Aleut faces: 1. Luka Mandriggan, 49 years; 2. Paraskovva, girl, 13 years; 3. Ivan, boy, 7 years; 4. Natalia, girl, 12 years; 5. Dondan, boy, 12 years. Typical Creole faces: 6. Aggie Koosling, boy, 18 years; 7. Fevronia, girl, 9 years; 8. Matroona, girl, 15 years; 9. Philip Volkov, 50 years; 10. Anourka, girl, 11 years; 11. Dimitrie Vealkin, 48 years.

established on the seal islands. As these natives live here, they live as a single family in each settlement, having one common purpose in life, and only one. What one native does, eats, wears, or says is known at once to all the others, just as whatsoever any member of our household may do, will soon be known to all of us who belong to its organization. Hence, if they steal or quarrel among themselves, they keep the matter wholly to themselves, and settle it to their own satisfaction. Were there rival villages on the islands and diverse people and employment, then the case would be reversed, and need of legal machinery apparent.

As it is, the agent of the Treasury Department is clothed with all the power necessary to fully maintain order up here. He is recognized and respected as the trusted representative of the Secretary of the Treasury, who is the supreme temporal ruler of their little commonwealth: and, as such, he is never disobeyed.

Seal meat is their staple food, and in the village of St. Paul they consume on an average fully 500 pounds a day the year round.¹ They have been, by the permission of the Secretary of the Treasury, allowed every fall to kill 5,000 or 6,000 seal pups, or an average of 22 to 30 young kotiekie for each man, woman, and child in the settlements. The pups will dress 10 pounds each. But that is now prohibited. This shows an average consumption of nearly 600 pounds of seal meat by each person, large and small, during the year. To this diet the natives add a great deal of butter and many sweet crackers. They are passionately fond of butter—no epicure at home or butter taster in Goshen knows or appreciates that article better than these people do. If they could get all that they desire they would consume 1,000 pounds of butter and 500 pounds of sweet crackers every week, and indefinite quantities of sugar—the sweetest of all sweet teeth are found in the jaw of the average Aleut. But it is, of course, unwise to allow them full swing in this matter, for they would turn their barrels into fermenting tanks, if they had full access to an unlimited supply of saccharine food. If unable to get sweet crackers, they will eat about 300 pounds of hard or pilot bread every week, and in addition to this nearly 700 pounds of flour at the same time. Of tobacco they are allowed 50 pounds a week; candles, 75 pounds; rice, 50 pounds. They burn, strange as it may seem, kerosene oil here to the exclusion of the seal fat, which literally overruns the island. They ignite and consume over 600 gallons of kerosene oil a year in the village of St. Paul alone. They do not fancy vinegar very much; perhaps 50 gallons a year is used up here. Mustard and pepper are sparingly used, 1 to 1½ pounds a week for the whole village. Beans they peremptorily reject; for some reason or other they can not be induced to use them.

Those who go about the vessels contract a taste for split-pea soup, and a few of these peas are sold in the village store. Salt meat, beef, or pork they will take reluctantly, if it is given to and pressed upon them: but, they will never buy it. I remember in this connection seeing 2 barrels of prime salt pork and a barrel of prime mess salt beef opened in the company's store shortly after my arrival in 1872, and, though the people of the village were invited to help themselves, I think I am right in saying that the barrels were not emptied when I left the island in 1873. They use a very little coffee during the year, not more than 100 pounds; but of tea, *a great deal*, about 100 chests every year; I can say truly, that they do not drink less than a gallon of tea apiece per diem. The amount of this beverage which they sip, from the time they rise in

¹This estimate was based on a population of 235 men, women, and children, in 1874, at St. Paul. To-day, there are only 213 souls in this village, July 31, 1890.

the morning until they go to bed late at night, is astounding. Their "samovars," and latterly the regular tea kettles of our American make, are bubbling and boiling from the moment the housewife stirs herself at daybreak until the fire goes out when they sleep. It should be stated in this connection that they are supplied with a regular allowance of coal every year by the company gratis: each family being entitled to a certain amount, which, alone, if economically used, keeps them warm all winter in their new houses; but, for those who are extravagant and are itching to spend their extra wages, an extra supply is always kept in the storehouses of the company for sale. Their appreciation of and desire to possess all the canned fruit that is landed from the steamer is marked to a great degree. If they had the opportunity I doubt whether a single family on that island to-day would hesitate to bankrupt itself in purchasing this commodity. Potatoes they sometimes demand, as well as onions: and, perhaps if these vegetables could be brought here and kept to an advantage, the people would soon become very fond of them. Six or seven years ago, and after the supply of sugar had been cut off from their purchase at the store, on account of their abuse of it in making quass and getting frequently drunk, they developed a great fondness for canned milk, ordered it at all times, and never got enough of it. Soon the reason appeared; there was and is a good body in 2 cans of Borden's condensed milk for the making of several gallons of beer!

Most of these articles of food just mentioned are purchased by the natives in the company's store¹ at either island. This food and the wearing apparel, crockery, etc., which the company bring up here for the use of the people, was sold to them at the exact cost price of the same plus the expenses of transportation, and many times within my knowledge they have bought goods here at these stores at less rates than they would have been subjected to in San Francisco. The object of the company was not, under any circumstances, to make a single cent of profit out of the sale of these goods to the natives; they aimed only to clear the cost, and no more. Instructions to this effect were given to its agents, while those of the Government were called upon to take notice of the fact.

Another important factor to the physical well-being of these people, is the presence on the Pribilof Islands of an abundant number of big sea lions (*Eumetopias stelleri*). This animal supplies them with its hide, mustaches, flesh, fat, sinews, and intestines, which they make up into as many necessary garments, dishes, etc. They have abundant reason to treasure its skin highly, for it is the covering to their neat bidarkies and bidarals, the former being the small kyak of Bering Sea, while the latter is a boat of all work, exploration, and transportation. These skins are unhaired by sweating in a pile: then they are deftly sewed and carefully stretched while green, over a light keel and frame of wood, making a perfectly water-tight boat that will stand, uninjured, the softening influence of water for a day or two at a time, if properly air dried and oiled. After being used during the day these skin boats are always drawn out on the beach, turned bottomside up, and air

¹The store at St. Paul, as well as that at St. George, has its regular annual "opening" after the arrival of the steamer in the spring, to which the natives seem to pay absorbed attention. They crowd the buildings day and night, eagerly looking for all the novelties in food and apparel. These slouchy men and shawl-hooded women who pack the area before the counters here, seem to feel as deep an interest in the process of shopping as the most enthusiastic votaries of that business do in our own streets. It certainly seems to give them the greatest satisfaction of their lives on the Pribilof Islands.





A drawing from nature by the author.

A GROUP OF SEA LIONS (*Enneptopias stelleri*), SAINT GEORGE ISLAND, AUGUST, 1890.

Old bulls 11 feet long, average weight 1,200 pounds; adult females 8 feet long, weight 400 to 600 pounds. The common black sea lion of San Francisco, *Zalophus*, is not half so large; is never seen in Bering Sea, but a few of these animals are always in sight, mixed in with the *Zalophus* at San Francisco, as they rest on the Seal Rocks at the Cliff House.

dried during the night. In this way they are made ready for employment again on the morrow.

A peculiar value is attached to the intestines of the sea lion, which, after cleansing, are distended with air and allowed to dry in that shape. Then they are cut into ribbons and sewed strongly together into that most characteristic water-proof garment of the Aleutian world, known as the "kamlaika,"¹ which, while being fully as water proof as india rubber, has far greater strength, and is never affected by grease and oil. It is also translucent in its fitting over dark clothes. The sea lions' throats are served in a similar manner: and, when cured, are made into boot tops, which are in turn soled by the tough skin that composes the palms of this animal's fore flippers. Around the natives' houses on St. Paul and St. George constantly appear curious objects which, to the unaccustomed eye, resemble overgrown gourds or enormous calabashes with attenuated necks. An examination proves them to be the dried, distended stomach walls of the sea lion filled with its oil (and sometimes with dried meat), which, unlike the offensive blubber of the fur seal, boils out clear and inodorous from its fat.

The flesh of an old sea lion, while not very palatable, is tasteless and dry; but the meat of a yearling is very much like veal, and when properly cooked I think it is just as good; but the superiority of the sea-lion meat over that of the fur seal is decidedly marked. It requires some skill in the cuisine ere sausage and steaks of the *Callorhinus* are accepted on the table: while it does not, however, require much art, experience, or patience for the cook to serve up the juicy ribs of a young sea lion so that the most fastidious palate will fail to relish it.

The carcass of the sea lion, after it is stripped of its hide and disembowled, is hung up in cool weather by its hind flippers over a rude wooden frame, or "labaas," as the natives call it; where, together with many more bodies of fur seals treated in the same manner, it serves from November until the following season of May, as the meat house of the Aleut on St. Paul and St. George. Exposed in this manner to the open weather, the natives keep their seal meat almost any length of time in winter for use; and, like our old duck and bird hunters, they say they prefer to have the meat tainted rather than fresh, declaring that it is most tender and toothsome when decidedly "loud."

In 1872, when slowly sketching by measurements the outlines of a fine adult bull sea lion which the ball from Booterin's rifle had just destroyed, an old "starooka" came up abruptly. Not seeming to see me, she deliberately threw down a large, greasy, skin meat bag: she whipped out a knife and went to work on my specimen. Curiosity prompted me to keep still, in spite of the first sensation of annoyance, so that I might watch her choice and use of the animal's carcass.

She first removed the skin, being actively aided in this operation by an uncouth boy; she then cut off the palms to both fore flippers. The boy at the same time pulled out the mustache bristles. She then cut out its gullet, from the glottis to its junction with the stomach, care-

¹The Aleutian name for this garment is unpronounceable in our language and equally so in the more flexible Russian; hence the Alaskan "kamlaika," derived from the Siberian "kamlaia." That is made of tanned reindeer skin, unhaired, and smoked by larch bark until it is colored a saffron yellow, and is worn over the reindeer-skin undershirt, which has the hair next to the owner's skin and the obverse side stained red by a decoction of alder bark. The kamlaia is closed behind and before, and a hood, fastened to the back of the neck, is drawn over the head when leaving shelter; so is the Aleutian kamlaika, only the one of Kolyma is used to keep out piercing dry cold, while the garment of the Bering Sea is a perfect water repellent.

fully divesting it of all fleshy attachments and fat. Then she cut free the stomach itself and turned it inside out, carelessly scraping the gastric walls clean of copious biliary secretions, the inevitable bunch of *ascaris*, etc. She then told the boy to take hold of the duodenum end of the small intestine, and, as he walked away with it, she rapidly cleared it of its attachments, so that it was thus uncoiled to its full length of at least 60 feet. Then she severed it: and then it was recoiled by the "melchiska," and laid up with the other members just removed, except the skin, which she had nothing more to do with. She then cut out the liver and ate several large pieces of that workhouse of the blood before dropping it into the meat pouch. She then raked up several handfuls of the "leaf lard," or hard, white fat that is found in moderate quantity around the viscera of all these pinnipeds, which she also dumped into the flesh bag. She then drew her knife through the large heart, but did not touch it otherwise, looking at it intently, however, as it still quivered in unison with the warm flesh of the whole carcass. She and the boy then poked their fingers into the tumid lobes of the immense lungs, cutting out portions of them only, which were also put into the grimy pouch aforesaid. Then she secured the gall bladder, and slipped it into a small yeast-powder tin, which was produced by the urchin. Then she finished her economical dissection by cutting the sinews out of the back in unbroken bulk from the cervical vertebra to the sacrum; all these were stuffed into that skin bag, which she threw on her back and supported it by a band over her head. She then trudged back to the barrakbie, from whence she sallied a short hour ago like an old vulture to the slaughter. She made the following disposition of its contents: The palms were used to sole a pair of tarbosars, or native boots, of which the uppers and knee tops were made of the gullets: one sea-lion gullet to each boot top; the stomach was carefully blown up, and left to dry on the barrakbie roof, eventually to be filled with oil rendered from sea-lion or fur-seal blubber. The small intestine was carefully injected with water and cleansed, then distended with air, and pegged out between two stakes 60 feet apart, with little cross slats here and there between, to keep it clear of the ground. When it is thoroughly dry it is ripped up in a straight line with its length and pressed out into a broad band of parchment gut, which she cuts up and uses in making a water-proof "kamlaikie," sewing it with those sinews taken from the back. The liver, leaf lard, and lobes of the lungs were eaten without further cooking, and the little gall bag was for some use in poulticing a scrofulous sore. The mustache bristles were a venture of the boy, who gathers all that he can, then sends them to San Francisco, where they find a ready sale to the Chinese, who pay about 1 cent apiece for them. When the natives cut up a sea-lion carcass, or one of a fur seal on the killing grounds for meat, they take only the shoulders and the loins. Later in the season they eat the entire carcass, which they hang up by the hind flippers on a "labaas" by their houses.

The St. George natives manage to secure a good many cod and halibut, but the St. Paul people have very poor luck fishing; so what they get in this line is really unimportant. In the early years—1870-1878—they all used their own boats, i. e., bidarkas: but during the last ten or twelve years, they have purchased yawls and whitehall boats of our make, for fishing, egging trips, etc. They are not active fishermen in any sense of the word. They are very fond, however, of sea eggs, and frequently the natives have brought a dish of sea urchins' ovaries for our table, offering it as a great delicacy. I do not think any of us did more than to taste it. The native women are the chief hunters for

A drawing from nature by the author.

WALRUS ISLET, FROM THE EAST, 6 MILES DISTANT FROM SAINT PAUL ISLAND, AUGUST 7, 1890.

The snow-like white cupping to the cliffs is the guano of the albatross (*L. arcticus*); these birds, together with gulls, auks, and sea parrots breed here in countless numbers.



Echinoidea, and during the whole spring and summer seasons they may be seen at both islands, wading in the pools at low water, with their scanty skirts high up, eagerly laying possessive hands upon every "bristling" egg that shows itself. They vary this search by poking with a short-handled hook into holes and rocky crevices for a small cottoid fish, which is also found here at low water, in this manner. Specimens of this "*kalog*," which I brought down, declared themselves as representatives of a new departure from all other recognized forms in which the sculpin is known to sport; hence the name, generic and specific, *Melletes papilio*.

By the 28th of May to the middle of June a fine table crab,¹ large, fat, and sweet, with a light, brittle shell, is taken while it is skurrying in and out of the lagoon as the tide ebbs and flows. It is the best-flavored crustacean known to Alaskan waters. The natives affirm the existence of mussels here in abundance when the Pribilof group was first discovered, but now, only a small supply of inferior size and quality is to be found.

The native cooking is all done now in their houses on small cast-iron stoves of American pattern and make. In olden times the unavoidable use of fur-seal blubber in culinary operations caused the erection outside of most "*barrabaras*," of a small sod-walled and low dirt-roofed kitchen, in which the strong smelling blubber fires were kept. Indifferent as the natives became to smells and smoke in the filthy life of early days upon these islands, yet the acrid, stifling, asthmatic effect of the blubber clouds never failed to punish them whenever they attempted to make use of such a fire in their living rooms. Most of these "*cook-hnets*," or "*povarniks*," were in full blast when I first landed at St. Paul; and, coming frequently into range of their smoky effluvium I was infinitely annoyed. Now, however, the complete substitution of new frame houses for the "*barrabkies*" has, I believe, caused a perfect abatement of the nuisance: it did last summer to my glad knowledge.

On account of the severe climatic conditions it is, of course, impracticable to have any sort of a vegetable garden, or to keep stock here with any profit or pleasure. The experiment has been tried faithfully. It is found best to bring beef cattle up in the spring on the steamer: turn them out to pasture until the close of the season in October and November, and then, if the snow comes, to kill them and keep the meat refrigerated the rest of the year. Stock can not be profitably raised here; the proportion of severe weather annually is too great. From six to perhaps eight months of every year they require feeding and watering, with good shelter. To furnish an animal with hay and grain up there is a costly matter, and the dampness of the growing summer season on both islands renders haymaking impracticable. The natives keep a few chickens. Some years they do very well, then an epidemic will break out, and for several seasons thereafter poultry raising is a complete failure on the islands; in short, chickens are kept with much difficulty; in fact, it is only possible to save their lives when the natives take them into their own rooms, or keep them above their heads in the little attics to their own dwellings during severe winters.

But for some reason or other these people have a strange passion for seal-fed pork, and in 1872-1874 there were quite a large number of hogs on the island of St. Paul and a few on St. George. The pigs soon become entirely carnivorous, living, to the practical exclusion of all other diet, on the carcasses of seals. It appears, however, that these hogs became so numerous by 1879-80 that the agents of the Government and company in 1881-1884 made up an indictment against the

¹ *Telemessus cheiragonus*.

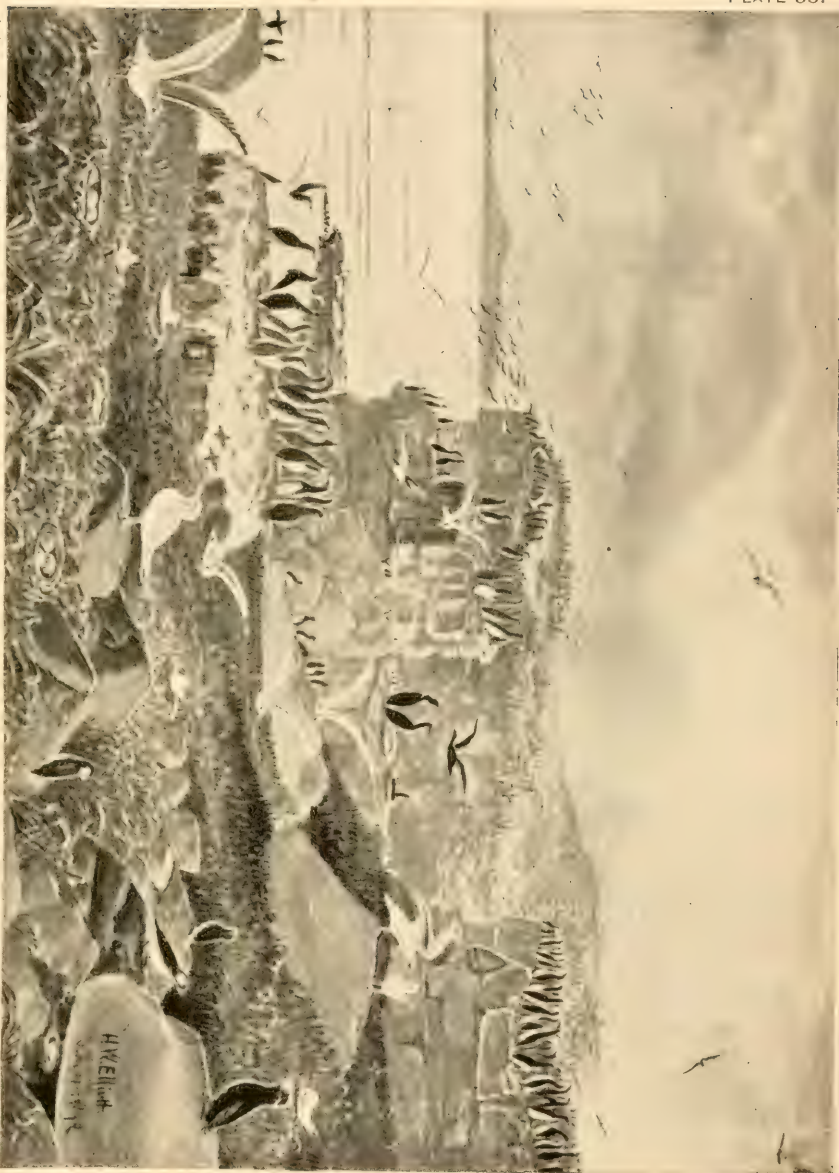
seal-island hogs, and proceeded to shoot them right and left, until the extermination of the species soon followed. The natives offered no resistance, but they still plead for permission to keep hogs.¹ Last but not least in this statement of native food resources, is the annual unlimited supply of water fowl from May until November—auks, arries, gulls, many ducks, and a few geese, the flesh and eggs of which are extensively consumed. After the dead silence of a long ice-bound winter the arrival of large flocks of those sparrows of the north, the “choochkies” (*Phalaris microceros*), is most cheerful and interesting. Those plump little auks are bright, fearless, vivacious birds, with bodies round and fat. They come usually in chattering flocks on or immediately after the 1st of May, and are caught by the people with hand scoops or dip nets to any number that may be required for the day’s consumption. Their tiny, rotund forms make pies of rare, savory virtue, and they are also baked, roasted, and stewed in every conceivable shape by the Russian cooks; indeed, they are equal to the reed birds of the South. These welcome visitors are succeeded rapidly by thousands and countless tens of thousands of guillemots or “arries” (*Lomvia arra*). This bird is the great egg producer of that region.

These people are singularly affectionate and indulgent toward their children. There are no “bald-headed tyrants” in our homes as arbitrary and ruthless in their rule as are those snuffly babies and young children on the seal islands. While it is very young, the Aleut gives up everything to the caprice of his child, and never crosses its path or thwarts its desire. The “deetiah” literally take charge of the house. But as soon as these callow members of the family become strong enough to bear burdens and to labor, generally between 12 and 15 years of age, they are then pressed into hard service, relentlessly, by their hitherto indulgent parents. The extremes literally meet in this application. The urchins play marbles, spin tops, and fly kites intermittently with all the feverish energy displayed by the youth of our own surroundings; they frolic at baseball and use “shinny” sticks with much volubility and activity. The girls are, however, much more repressed; and, though they have a few games and play quietly with quaintly dressed dolls, yet they do not appear to be possessed of that usual feminine animation so conspicuously marked in our home life.

One of the peculiarities of these people is that they seldom undress when they go to bed, neither the men, women, nor children; and also that at any and all hours of the night during the summer season, when I have passed in and out of the village to and from the rookeries, I always found several of the natives squatting before their house doors or leaning against the walls stupidly staring out into the misty darkness of the fog or chatting one with the other over their pipes. A number of the inhabitants by this disposition are always up and around throughout the settlement during the entire night and day. In olden times, and even recently, these involuntary sentinels of the night have often startled the whole village by shouting at the top of their voices the pleasant and electric announcement of the “ship’s light!” or have frozen it with superstitious horror by the recital at daybreak, of ghostly visions.

The inherent propensity of man to gamble is developed here to a very appreciable degree: but, it in no way suggests the strange gaming love and infatuation with which the Indians and Eskimo elsewhere of Alaska are possessed. The chief delight of the men and boys of the two villages is to stand on the street corners pitching half dollars. So

¹ I think that they should be permitted to keep a few, if they will pen them up and care for them properly.



A drawing from nature by the author.

POLARNA SOPKA, SAINT PAUL'S ISLAND.
(8 miles distant.)

SEA BIRDS BREEDING ON WALRUS ISLAND, JULY 4, 1872.

The arctic occupy all of the outer plateau belt; it is white with their droppings; the cliff fronts are occupied by the Kittiwake gulls, and the cormorants; the grassy interior is chiefly occupied by the big Bonaparte gulls and a few Kittiwake gulls. On the rocky shingle and under the loose surf-thrown bowlders the auks and sea parrots breed. On the low lava tables, just above surf wash, the walrus hauls out.

devoted indeed have I found the native mind to this haphazard sport that frequently I would detect groups of them standing out in pelting gales of wind and rain "shying" their silver coin at the little dirt-driven pegs. A few of them, men and women, play cards with much skill and intelligence.

The attachment which the natives have for their respective islands was well shown to me in 1874. Then a number of St. George people were taken over to St. Paul temporarily to do the killing incidental to a reduction of the quota of 25,000 for their island and a corresponding increase at St. Paul. They became homesick immediately: and, were never tired of informing the St. Paul natives that St. George was a far handsomer and more enjoyable island to live upon; that walking over the long sand beaches of "Pavel" made their legs grievously weary; and that the whole effect of this change of residence was "ochen scootchnie." Naturally the ire of the St. Paul people rose at once, and they retorted in kind, indicating the rocky surface of St. George and its great inferiority as a seal island. I was surprised at the genuine feeling on both sides, because, as far as I could judge from a residence on each island, it was a clear case of tweedle-dee and tweedle-dum between them as to opportunities and climate necessary for a pleasurable existence. The natives themselves are of one and common stock, though the number of Creoles on St. George is relatively much larger than on St. Paul; consequently the tone of the St. George settlement is rather more sprightly and vivacious.

This question is often asked, How do these people employ themselves during the long nine months of every year after the close of the sealing season and until it begins again, when they have little or absolutely nothing to do? It may be answered that they simply vegetate: or, in other words, are entirely idle, mentally and physically, during most of this period. But to their credit let it be said that mischief does not employ their idle hands. They are passive killers of time, drinking tea and sleeping, with a few disagreeable exceptions, such as the gamblers. There are a half dozen of these characters at St. Paul, and perhaps as many at St. George, who pass whole nights at their sittings, even during the sealing season, playing games of cards taught by Russians and persons who have been on the island since the transfer of the territory. But the majority of the men, women, and children, not being compelled to exert themselves to obtain any of the chief or even the least of the necessities of life, such as tea and hard bread, sleep the greater portion of the time, when not busy in eating and in the daily observances of the routine belonging to the Greek Catholic Church. The teachings, pomp, and circumstance of the religious observances of this faith alone preserve these people from absolute stagnation. In obedience to its teachings, they gladly attend church very regularly. They also make and receive calls on their saints' days, and these days are very numerous. I think some 160 of the whole year's calendar must be given up to the ceremonies attendant upon the celebration of some holy birth or death.

In early times the same disgraceful beer-drinking orgies which prevailed to so great an extent and still cause so much misery and confusion, seen elsewhere in the Territory, prevailed here: and, I remember very well the difficulty which I had in initiating the first steps taken by the Treasury Department, to suppress this abominable nuisance. During the last fourteen or fifteen years, it gives me pleasure to say, since the new order of things was inaugurated, the several agents of the Department have faithfully executed the law.

The natives add to these entertainments of their saints' days and birth

festivals, or "Emannimiks," the music of accordeons and violins. Upon the former and its variation, the concertina, they play a number of airs, and are very fond of the noise. A great many of the women, in particular, can render indifferently a limited selection of tunes, many of which are the old battle songs so popular during the rebellion, woven into weird Russian waltzes and love ditties, which they have jointly gathered from their former masters and our soldiers, who were quartered here in 1869. From the Russians and the troops, also, they have learned to dance various figures and have been taught to waltz. These dances, however, the old folks do not enjoy very much. They will come in and sit around and look at the young performers with stolid indifference; but, if they manage to get a strong current of tea setting in their direction, nicely sugared and toned up, they revive and join in the mirth. In old times they never danced here unless they were drunk; and it was the principal occupation of the amiable and mischievous Treasury agents and others in the early days, to open up this beery fun. Happily, that nuisance is abated. During the last six or eight years they have organized a very good string and brass band on St. Paul Island, and play well.

NUMBER OF THE ISLANDERS.

The population¹ of St. Paul Island in 1872 was 235 souls; to-day, in 1890, it is 213 souls. Of St. George Island in 1872, it was 127 souls; to-day it is 98. This declares a decrease, since then, of 93. Prior to 1873 they had neither much increased nor diminished for 50 years, but would have fallen off rapidly (for the births were never equal to the deaths) had not recruits been regularly drawn from the mainland and other islands every season when the ships came up. As they lived then, it was a physical impossibility for them to increase and multiply. But since their elevation and their sanitary advancement became so marked it was reasonably expected that those people for all time to come would at least hold their own, even though they do not increase to any remarkable degree. Perhaps it is better that they should not. They are, of all men, especially fitted for the work connected with the seal business. No comment is needed. Nothing better in the way of manual labor, skilled and rapid, could be rendered by any body of men equal in numbers living under the same circumstances all the year round. They appear to shake off the periodic lethargy of winter and its forced inanition, to rush with the coming of summer, into the severe exercise and duty of capturing, killing, and skinning the seals with vigor and with persistent and commendable energy.

To-day, only a very small proportion of the population are descendants of the pioneers who were brought here by the several Russian companies in 1787 and 1788; a colony of 137 souls, it is claimed, principally recruited at Unalaska and Atka. The principal cause of death among the people by natural infirmity on the seal islands is the varying forms of consumption and bronchitis, always greatly aggravated by that inherited scrofulous taint or stain of blood which was, in one way or another, flowing through the veins of their recent progenitors, both here and throughout the Aleutian Islands. There is nothing worth noticing in the line of nervous diseases, unless it be now and then the record of a case of alcoholism, superinduced by excessive quass drinking. This "makoolah" intemperance among these people, which was

¹ In the report of Mr. Goff, extracts of which I reprint in Section VIII, will be found all the details of the earnings, etc., of these people.

not suppressed until 1876, was a chief factor to the immediate death of infants; for, when they were at the breast, the mothers would drink quass to intoxication, and the stomachs of the newly born Aleuts or Creoles could not stand the infliction which they received, even second-hand. Had it not been for this wretched spectacle so often presented to my eyes in 1872-73, I should hardly have taken the active steps which I did to put the nuisance down, for it involved me, at first, in a bitter personal controversy which, although I knew at the outset it was inevitable, still weighed nothing in the scales against the evil itself.¹

A few febrile disorders are occurring, yet they yield readily to good treatment, but they have this peculiarity: when they are ill, slightly or seriously, no matter which, they maintain or affect a stolid resignation, and are patient to positive apathy. This is not due to deficiency of nervous organization, because those among them, who exhibit examples of intense liveliness and nervous activity, behave just as stolidly when ill, as their more lymphatic townsmen do. Boys and girls, men and women, all alike, are patient and resigned when ailing and under treatment. But, it is a bad feature, after all, inasmuch as it is well-nigh impossible to rally a very sick man who himself has no hope, and who seems to mutely deprecate every effort to save his life.

¹ This evil of habitual and gross intoxication under Russian rule was not characteristic of these islands alone; it was universal throughout Alaska. Sir George Simpson, speaking of the subject when in Sitka, April, 1842, says: "Some reformation certainly was wanted in this respect; for of all the drunken, as well as of all the dirty places that I had visited, New Archangel (Sitka) was the worst. On the holidays, in particular, of which, Sundays included, there are 165 in the year, men, women, and even children were to be seen staggering about in all directions." (Simpson: *Journey Around the World, 1841-42*, p. 88.)

SECTION VI.

CONDUCT OF NATIVE LABOR AND PAY IN 1872-1874 AND 1890 ON THE PRIBILOV ISLANDS.

Living as the seal islanders do, and doing what they do, the seal's life is naturally their great study and objective point. It nourishes and sustains them. Without it they say they could not live, and they tell the truth. Hence their attention to the few simple requirements of the law, so wise in its provisions, is not forced or constrained, but is continuous. Self-interest in this respect appeals to them keenly and eloquently. They know everything that is done, and everything that is said by anybody and by everybody in their little community. Every seal drive that is made, and every skin that is taken, is recorded and accounted for by them, by their chiefs and their church, when they make up their tithing roll at the close of each season's labor. Nothing can come to the islands, by day or by night, without being seen by them and spoken of. I regard the presence of these people on the islands at the transfer, and their subsequent retention and entailment in connection with the seal business, as an exceedingly good piece of fortune, alike advantageous to the Government, to the company, and to themselves.

When we go back to the beginning of the sealing industry on these islands, the time of Pribilov and his rivals in 1786, to 1799 and 1801, and attempt to find any record of the conduct of the labor or compensation paid to laborers here, we discover nothing that throws the least light upon the subject. When the old Russian-American Company was put into supreme control of all Alaska in 1799, and Baranov had time in 1803 to visit these islands and close them to everybody save his own agents, we may safely assume to know pretty well what was done in this respect. We know it because we have the following statement from the best authority:

The Aleuts serving the company sustain the following relations between themselves and it, to wit: Each of them worked without solicitation, were ordered to do whatever was found and to which they were directed, or at that which they understood best. Payment for their toil was not established by the day or by the year, but in general for each thing taken by them, or standing or put to their credit by the company; for instance, especially the skins of animals, the teeth of walrus, barrels of oil, etc. These sums, whatever they might be, were placed by the company to their credit, for all general working and hunting was established or fixed for the whole year fairly. These Aleuts in general, receive no specific wages and they are not all alike or equal, there being usually three or four classes.

In these classes, to the last or least, the sick and old workmen are counted in, although they are only burdens and, therefore, they receive the smaller shares, about 150 rubles (i. e., \$40) a year, and the other and better classes receive from 220 to 250 rubles per year (\$55 to \$60). Those who are zealous are rewarded by the company with 50 to 100 rubles (\$10 to \$25). The wives of the Aleuts who worked at the seal hunting received from 25 to 35 rubles (\$6 to \$9) per annum. (Veniaminov: *Zapiska*, etc., St. Petersburg, 1840.)

This definition of the subject by Bishop Veniaminov shows us the precise relation and nature of pay that we are looking for. It covers the whole of that extended period from 1801 to 1868, sixty-seven years.

The rubles that all payment in Alaska during that time was made in were paper or parchment tags, stamped with the private mark of the old company, and rated at about 20 cents per ruble, in the Aleutian district, according to Veniaminov: inasmuch as he states that in 1835, "4 paper rubles here are worth one of silver."

At the time of the transfer of Alaska, July, 1867, and from that time until December, 1867, nothing was known by the people on these islands of the change: and they had no realization of the significance of that change until April, 1868, when three rival American sealing parties landed on St. Paul Island within a few days of each other, and promptly began to make preparations for the coming of the seals, and taking their skins. Four different parties under the American flag established themselves a little later, if at all behind, on St. George. These several parties, all bent on sealing, and many of them having old antarctic fur sealers in control, were anxious and desirous of securing all the native labor, each one to itself, as against its rivals. The foremen then began to offer to pay the natives more and more, as they bid over one another, per skin, when delivered during the sealing season. They finally found that they would bid so high for the native labor in this manner, as to leave no profit. This brought them to an amicable agreement among themselves, by which they would pay no more nor less than 40 cents per skin delivered by the natives. Then the natives worked for all hands during the season of 1868, without any particular advantage in serving one party better than the other.

This season's work of 1868 fixed the price of labor for skinning a young male fur seal at 40 cents for the first time on these islands; a tariff at least four times greater than ever before received by the native sealer here; and this rate of 40 cents was at once assumed and paid by the Alaska Commercial Company at the inception of its lease in 1870, and continued in the new lease of 1890, to the North American Commercial Company, by order of the Secretary of the Treasury for the present season of 1890.

During the last twenty years, and throughout the present season, the natives themselves worked under the direction of their own chosen foremen, or "toyone." This chief calls out the men at the break of every working day, divides them into detachments according to the nature of the service, and orders their doing. All communication with the laborers on the sealing ground and the company passes through his hands. These chiefs have every day an understanding with the agent of the company as to his wishes, and they govern themselves thereby.

The company directs its own labor in accordance with the law as it sees fit; selects its time of working, etc., in accordance with and obedience to the regulations of the Secretary of the Treasury from year to year.

The Treasury officials on the seal islands are charged with the careful observance of every act of the company; a copy of the lease and its covenant is conspicuously posted in their office; is translated into Russian, and is familiar to all the natives. The care and supervision of the welfare of the rookeries and of the natives was and is their chief charge.

The old company paid, and the new company pays 40 cents for the labor of taking each skin. The natives take the skins on the killing ground. Then the skins are brought up and counted into the salt houses, where the agent of the company receives them from the hands of his own employees. When the quota of skins is taken, at the close of two, three, or four weeks of labor, as the case may be, the total sum for the entire catch is paid over in a lump to the chiefs: and these men

divide it among the laborers according to their standing as workmen, which they themselves have agreed upon by special tally sticks. For instance, at the annual division or "catch" settlement made by the natives on St. Paul Island among themselves in 1872, when I was present, the proceeds of their work for that season in taking and skinning 75,000 seals, at 40 cents per skin, with extra work connected with it, making the sum of \$30,637.37, was divided among them in this way: There were 74 shares made up, representing 74 men, though in fact only 56 men worked: but they wished to give a certain proportion to their church, a certain proportion to their priest, and a certain proportion to their widows, so they watered their stock, commercially speaking. The 74 shares were proportioned as follows:

37 first-class shares, each	\$451. 22
23 second-class shares, each	406. 08
4 third-class shares, each	360. 97
10 fourth-class shares, each	315. 85

And since 1870, up to 1890, they have never received less than this, except in one season (1877), when only 80,000 instead of 100,000 were taken. But, last summer the catch on St. Paul was little more than 16,500 skins, so that the division was but slightly over one-fifth of the cash equivalent of the annual settlement hitherto, during the past nineteen years.

In August, 1873, while on St. George Island, I was present at a similar division under similar circumstances, which caused them to divide among themselves the proceeds of their work in taking and skinning 25,000 seals, at 40 cents a skin, \$10,000. They made the following subdivision.

	Per share.
17 shares each, 961 skins	\$384. 40
2 shares each, 935 skins	374. 00
3 shares each, 821 skins	328. 40
1 share each, 820 skins	328. 00
3 shares each, 770 skins	308. 00
3 shares each, 401 skins	160. 00

These 29 shares referred to, represent only 25 able-bodied sealers, 2 of whom were women. This method of division as above given is the result of their own choice. Four shares went to the church.

In August, 1890, I was again present on St. George when the list was made up, but instead of the division being based upon the proceeds of taking 25,000 skins, it was the mere form of dividing \$50 or \$60 apiece among the sealers, who have been able to take only 4,132 skins on St. George this year.

There has always been much difference of opinion as to how this annual settlement should be made among the natives. I said in 1874:

It is an impossible thing for the company to decide their relative merits as workmen on the ground, so they have wisely turned its entire discussion over to them. Whatever they do they must agree to; whatever the company might do they possibly and probably would never clearly understand, and hence dissatisfaction and suspicion would inevitably arise. As it is, the whole subject is most satisfactorily settled.

I am still of that opinion: but, since then a gradual removal of the whole control from the natives has been made in the following manner: At the close of the season's work, i. e., when the quota has been secured, by the 16th to the 20th of July as a rule, the chiefs and their people would make up their division in the method above described. This, when submitted to the company's agent and the Treasury officer, was usually altered by changing the names of the notorious loafers in the





A drawing from nature by the author.

LOADING BUNDLED FUR-SEAL SKINS FROM THE SALT HOUSE TO THE SHIP, JULY 17, 1872.

View of natives and bidarrahs at work, Northeast Point, Saint Paul Island; Cross Hill and sand dunes in middle distance.

CROSS HILL.

sealing gang into those lower grades of the division and putting better men up. The loafers were usually men of influence with the church, and, strange as it may seem, with their own industrious townsmen, so they were able to have their names generally placed at the top of this list. Strictly speaking, this action of the agents of the company and Government in revising the list, was entirely in the right, but the natives were better satisfied with their old way of 1872-1874, for the reasons which I give in the citation above.

This payment of 40 cents per skin taken by the natives covers nothing except the labor of driving the seals, skinning them, and helping the outside employees of the lessees to salt them in the salt houses. The extra work of bundling these skins for shipment was paid for by the bundle—1 cent per bundle—so that a smart native could make \$2 per day while at this work. Then, when the ships arrived and sailed, the great and necessary labor of lightering their cargoes, off and on, from the roadsteads where vessels anchor, was principally performed by these people: and they were paid so much a day for their labor, from 50 cents to \$1, according to the character of the service they rendered. This operation, however, is much dreaded by the ship captains and seagoing men, whose habits of discipline and automatic regularity and effect of working, render them severe critics and impatient coadjutors of the natives: who, to tell the truth, hated to do anything after they had pocketed their reward for sealing; and, when they did labor after this, they regarded it as an act of very great condescension on their part.

Until 1882, all the labor outside of sealing incident to the business on these islands, was executed by the natives of the two settlements of St. Paul and St. George, with the aid of a half dozen white men on shore, employees of the lessees, and the crews of their vessels. But in 1882 an epidemic of typhoid pneumonia scourged the village of St. Paul, and fully one half of the able-bodied men were dead when it subsided in 1883. This made it necessary for the lessees to bring up thirty or forty natives from Oonalashka every sealing season thereafter, to do this work of salting and bundling skins and unloading and loading the vessels. These outside laborers came up on the lessees' steamer every May, or by the 1st of June: were quartered ashore: and worked here until the close of the season in July; then returned by the 3d to 10th of August, to Unalashka, receiving pay at the rate of \$40 per month and found. They never have been permitted to drive or skin seals. That work has been done entirely by the Pribilof men ever since 1870, up to the present hour.

In 1872-1874 and up to 1885, these seal islanders elected their chiefs after their own choice. They finally got into so much internal liking and disliking over this selection that the chiefs so elected began to be disobeyed and slighted by many of their men. Thereupon, the Treasury agent and the company's representative in charge, took the matter up, selected a new man, and pronounced him chief. That settled the difficulty and ended it; he was promptly obeyed.

Some of the natives save their money: but there are very few among them, perhaps not more than a dozen, who have the slightest economical tendency. What they can not spend for luxuries, groceries, and tobacco, they manage to get away with at the gaming table. They have their misers and their spendthrifts, and they have the usual small proportion who know how to make money and then how to spend it. A few among them who are in the habit of saving, opened a regular bank account with the company. Some of them have to-day \$2,000 or \$3,000 saved, drawing interest at 4 per cent.

SECTION VII.

THE PROTECTION AND PRESERVATION OF THE FUR-BEARING INTERESTS OF OUR GOVERNMENT ON THE PRIBILOV ISLANDS—THE IMMEDIATE ACTION NECESSARY, VIEWED IN THE FULL LIGHT OF EXISTING DANGER.

Those statements and exhibitions of fact contained in the foregoing Sections, I to IV, inclusive, warrant me in declaring that the close of the present season's work of 1890 brings a grave question and its alternative promptly forward—*shall our Government make no further effort to prevent the extermination of its sealing preserves on the Pribilof Islands? or, will it step forward again and try anew to prevent that ruin?*

There is a universal, a hearty wish, not only at home, but abroad, that these Alaskan fur-seal rookeries be preserved: and a hope that these anomalous and valuable interests can be saved: and every reputable commercial, scientific, and political organization throughout the whole civilized world will applaud any action that will draw the Powers of Great Britain, Russia, and the United States together in harmonious effort to that end.

Telling the truth, as I have been compelled to tell it in detail, will have, however, this compensation—it will arouse and enlist the sympathy and support of a very large element that has heretofore declared its utter indifference as to whether the hunting of fur seals in the open waters of Bering Sea was prohibited, or not: since it believed that the last official reports published up to 1889, as filed in the Treasury Department, were correct in declaring that the Pribilof fur seals were vastly increased and increasing still over their fine form and number of 1872–1874.¹ And it also said, “What real harm are these poachers doing? Why, only look at the figures! after all their work, yet in spite of it, there are more seals than ever on those islands. Their work may annoy and injure somewhat the leased monopoly up there, but what of that? If the seals can stand it, we do not feel concerned.”

Those erroneous statements made in 1886, 1887, and 1888² by official reports to the Treasury, declaring a steady increase of seals on the Pribilof Islands, have given to the pelagic sealers during the last four years, solid aid and comfort, that has been advanced to them from official circles not only at home, but in Great Britain and Canada: and which would not have been proffered from any quarter for a moment, had the fact been believed that ever since 1882, the Pribilof seals have been declining in number, rapidly dwindling ever since 1886.

Those, who did not, and do not believe that we are right in claiming Bering Sea as a *mare clausum* will at once heartily unite with those who do believe in that doctrine, in so far as making it a closed sea to all pelagic sealing at the moment such action becomes necessary to prevent an extermination of those world renowned rookeries of Bering Sea. And, in the presence of this threatening ruin, the most pro-

¹ See Appendix, pp. 203-207.

² See Appendix, pp. 203-207.

nounced opponents of the leasing system, monopolies, etc., will be equally prompt in joining hands with those who do believe in this plan, to advance any order that promises preservation and conservation.

But, this plan of restoration must be an unselfish one: must be free from any taint of private gain or profit, or it will fail to receive this universal sympathy and indorsement. *It will fail, and it ought to fail, if it is not so planned.*

Before sketching an outline of the action which I deem necessary for the Secretary of the Treasury to take for the coming season of 1891, and that legislation by Congress to strengthen his hands, the following account¹ of a similar decline of the seal life on these Pribilof Islands and its restoration, way back from 1817 to 1834, is pertinent in this connection:

INDISCRIMINATE SLAUGHTER BY THE FIRST DISCOVERERS.

From the time of the discovery of the Pribilof Islands up to 1805 (or that is, until the time of the arrival in America of General Resanov),² the taking of fur seals on both islands progressed without count or lists, and without responsible heads or chiefs, because then (1787 to 1805, inclusive) there were a number of companies, represented by as many agents or leaders, and all of them vied with each other in taking as many as they could before the killing was stopped. After this, in 1806 and 1807, there were no seals taken, and nearly all the people were removed to Unalaska.

PARTIAL CHECK ORDERED.

In 1808 the killing was again commenced, but the people in this year were allowed to kill only on St. George. On St. Paul, hunters were not permitted this year, or the next. It was not until the fourth year after this that as many as half the number previously taken were annually killed. From this time (St. George 1808 and St. Paul 1810) up to 1822, taking fur seals progressed on both islands without economy and with slight circumspection, as if there were a race in killing for the most skins. Cows were taken in drives and killed, and were also driven from the rookeries to places where they were slaughtered.

It was only in 1822, that G. Moorayev (governor) ordered that young seals should be spared every year for breeding: and from that time there were taken from the Pribilof Islands, instead of 40,000 to 50,000, which Moorayev ordered to be spared in four successive years, no more than 8,000 to 10,000. Since this, G. Chestyahkov, chief ruler after Moorayev, estimated that from the increase resulting from the legislation of Moorayev, which was so honestly carried out on the Pribilof Islands, that in these four years the seals on St. Paul had increased to double their previous number, (*that*) he could give an order which increased the number to be annually slain to 40,000; and this last order or course directed for these islands, demanded as many seals as could be got: but, with all possible exertion, hardly 28,000 were obtained.

¹Translated by the writer from Veniaminov's *Zapieskie*, etc., St. Petersburg, 1842, Vol. II, p. 568. The italics are mine, and my translation is nearly literal, as might be inferred by the idiom here and there.

²Resanov, in his official letter to the Emperor of Russia dated Oonalaska Island, July 28, 1805, says: "The multitude of seals in which St. Paul abounds is incredible. The shores are covered with them. They are easily caught, and as we were short of provisions 18 were killed for us in half an hour. But at the same time we were informed that they had decreased in number 90 per cent since earlier times. These islands would be an inexhaustible source of wealth were it not for the Bostonians, who undermine our trade with China in furs, of which they obtain large numbers on our American coast. As over a million had already been killed, I gave orders to stop the slaughter at once, in order to prevent their total extermination, and to employ the men in collecting walrus tusks, as there is a small island near St. Paul covered with walrus." He adds that he met with sufficient evidences of carelessness and waste: "The skins of the fur seal were scattered about over the beach and the bluff in various stages of decomposition. The storehouses were full, but only a small part of their contents was in a marketable state." As many as "30,000 had been killed for their flesh alone," the skins having been "left on the spot or thrown into the sea." After questioning the Aleutian laborers and Russian overseers, Resanov came to the conclusion that unless an end were put to this wanton destruction, a few years more would witness the extirpation of the fur seal.—[H. W. E.]

POOR RESULTS.

After this, when it was most plainly seen that the seals were, on account of this wicked killing, steadily growing less and less in number, the directions were observed for greater caution in killing the grown seals and young females which came in with the droves of killable seals, and to endeavor to separate, if possible, these from those which should be slain.

PARTIAL CHECKS AGAIN ORDERED.

But all this hardly served to do more than keep the seals at one figure or number, and hence did not cause an increase. Finally, in 1834, the governor of the company, upon the clear (or "*handsome*") argument of Baron Wrangel, which was placed before him, resolved to make new regulations respecting them, to take effect in the same year (1834), and, following this, on the island of St. Paul only 4,000 were killed instead of 12,000.

On the island of St. George the seals were allowed to rest in 1826 and 1827, and since that time greater caution and care have been observed, and headmen, or foremen, have kept a careful account of the killing.

From this it will be seen, that no anxiety or care as to the preservation of the seal life began until 1805 (i. e., with the united companies).

It is further evident that all half measures, seen or not seen, were useful no longer, as they only served to preserve a small portion of the seal life, and only the last step (1834) with the present people or inhabitants has proved of benefit. And if such regulations of the company continue for fifteen years (i. e., until 1849), it may be truly said that then the seal life will be attracted quite rapidly, under the careful direction of headmen, so that in quite a short time a handsome yield may be taken every year. In connection with this subject, if the company is moderate, and these regulations are carried out, the seal life will serve them, and be depended upon, as shown in this volume, Table No. 2.

IDEAS OF THE OLD NATIVES, AS TO VIRILITY OF DRIVEN SEALS.

Nearly all the old men think and assert that the seals which are spared every year ("*zapookat kotov*"), i. e., those which have not been killed for several years, are truly of little use for breeding: lying about as if they were outcasts or disfranchised. About these seals, they show that after the seals were spared, they were always less than they should be: as, for instance, on the island of St. George, after two years of saving or sparing of 5,500 seals, in the first year they got, instead of 10,000 or 8,000 as they expected, only 4,778.

WHY THE SEALS DIMINISHED.

But this diminution, which is shown in the most convincing manner, is due to wrong and injustice, because it would not have been otherwise with any kind of animals—even cattle would have been exterminated—because a great many here think and count that the seal mother brings forth her young in her third year, i. e., the next two years after her own birth.¹ As it is well shown here the spared seals ("*zapookie*") were not more than 3 years old, and therefore it was not possible to discern the correct and true numbers as they really were. Taking the females killed by the people, together with all the seals which were purposely spared, it was seen that the seal mothers did not begin to bear earlier than the fifth year of their lives. Illustrative of this is the following:

(a) On the island of St. George, after the first zapooka, in 1828, the killing of 5-year-old seals was continued gradually up to five times as many as at first. With those of 5 years old the killing stopped. Then next year twelve times as many 6-year-olds were observed on the islands, as compared with their number of the last year; and with, or in the seventh year, came seven times as many. This shows that females born in 1828 did not begin to bear young until their fifth year, and become with young accordingly; that the large ones did not appear or come in six years (from 1828), as is evident, for in the fifth year all the females did not bring forth.

(b) It is known that the male seals can not become "*seecatchies*" (*adult bulls*) earlier than their fifth or sixth year. Following this, it may be said that the female bears earlier than the fourth year.

¹And these natives were right. The females do bear their first young in the third year of their lives. Veniaminov falls into an error when he concludes that they do not. He has read a little too much of Buffon. Better not have read him at all.—H. W. E.

(c) If the male seal can not become a bull (seecatchie) earlier than the fifth year, then, as Buffon remarks, "animals can live seven times the length of the period required for their maturity." Therefore a seecatch can not live less than thirty years and a female not less than twenty-eight.¹

VENIAMINOV'S BELIEF THAT FEMALES CAN NOT BEAR YOUNG UNTIL FOUR YEARS OLD.

Taking the opinion of Buffon for ground in saying that animals do not come to their full maturity until one-seventh of their lives has passed, it goes also to prove that the female seal can not bear young before her fourth year.

It is, without doubt, a fact that female seals do not begin to bear young before their fifth year, i. e., the next four years after the one of their birth, and not in the third or fourth year. That, however, is not the rule, but the exception. To make it more apparent that females can not bear young in their third year, consider 2-year-old females, and compare them with seecatchie (adult bulls) and cows (adult females), and it will be evident to all that this is impossible.

Do the females bear young every year; and how often in their lives do they bring forth?

HIIS DOUBTS ON THE SUBJECT.

To settle this question is very difficult, for it is impossible to make any observations upon their movements. But I think that the females in their younger years (or prime) bring forth every year, and as they get older, every other year. Thus, according to people accustomed to them, they may each bring forth in their whole lives from 10 to 15 young and even more. This opinion is founded on the fact that never (except in one year, 1832) have an excessive number of females been seen without young; that cows not pregnant hardly ever come to the Pribilof Islands; that such females can not be seen every year. As to how large a number of females do not bear, according to the opinions and personal observations of the old people, the following may be depended upon with confidence: Not more than one-fifth of the mature or "effective" females are without young. But to avoid erroneous impressions or conflicting statements between others and myself, I would state that I have had but one season ("trayt") in which to personally observe and consider the multiplication of seals.

HIIS THOUGHTS ON BIRTH OF PUPS.

There is one more very important question in the consideration of the breeding or the increase of seals, and that is, of the number of young seals born in one year how many are males? and is the number of males always the same in proportion to the females?

Judging from the holluschickie accumulated from the zapooska in 1822-1824 on the island of St. Paul and in 1826-27 on the island of St. George, the number of young males was widely variable. For example, on the island of St. Paul, in three years 11,000 seals were spared, and in the following three years there were killed 7,000, i. e., about two-thirds of the number saved. Opposed to this, on the island of St. George, from 8,500 seals spared in two years less than 3,000 were taken, hardly one-third.

Why this irregularity? Why should more young males be born at one time and at another less? Or, why should there be years in which many cows do not bear young?

According to the belief of the people here I think that of the number of seals born every year, half are males and as many females (*i. e., the other half*).

To demonstrate the above-mentioned conditions of seal life table No. 1 has been formed of the number of seals annually killed on the Pribilof Islands from 1817 to 1838 (when this work was ended).

From this it will be seen that—

(1) No single successive year presents a good number of seals killed as compared with the previous year; the number is always less.

(2) The annual number of seals killed was not in a constant ratio.

¹This remark is sustained by the observation of old men, and especially by one of the best creoles, Shiesneekov, who was on the island of St. Paul in 1817, and who knows of one seecatch (known by a bald head) which in that time had already a large herd of cows or females, surrounded and hunted by a like number of females and strong, savage old bulls. Therefore it may be safely thought that this bull did not get his growth until his fifth year, and at this time he could not have been less than ten years old. And this same bull came every year to the island and the same place for fifteen years in succession up to 1832, and it was only in the later years that his harem grew smaller and smaller in number.

(3) And therefore in the regular hunting season there is less need or occasion, during the next fifteen years, to demand the whole seal kind.

(4) Fewer seals were killed in those years generally following a previous year in which there were larger numbers of the holluschickie—that is, when the young males were not completely destroyed—and more were killed when the number of holluschickie was less.

(5) The number of holluschickie is a true register or showing of the number of seals; i. e., if the holluschickie increase and exist like the young females, and conversely.

(6) Holluschickie break from the (common) herd and gather by themselves no earlier than the third year, as seen in the case of the spared seals on the islands of St. George and St. Paul, the latter from 1822-1824 to 1835-1837, inclusive; the former from 1826-27.

(7) The number of seals killed on the island of St. George after two years (zapooksa) was resumed and gradually increased to five times as many.

(8) In the fifth year from the first zapooksa (or saving) it became impossible to count or reckon on the number remaining, and 6-year olds began to appear twelve times as numerous and 7-year-olds came in numbers sevenfold greater than their previous small number, and therefore the number of 3-year-old seals was quite constant.

(9) If on the island of St. George in 1826-27 the seals had not had this rest (zapooksa) and the killing had been continued even at the diminished ratio of one-eighth, in 1840 or 1842 there would not have been a single seal left, as appears by the following table:

	Seals.		Seals.		Seals.		Seals.
1825.....	5,500	1829.....	2,468	1833.....	1,360	1837.....	700
1826.....	4,400	1830.....	2,160	1834.....	1,190	1838.....	580
1827.....	3,520	1831.....	1,890	1835.....	1,040	1839.....	500
1828.....	2,816	1832.....	1,554	1836.....	850	1840.....	400

RESULTS OF THE ZAPOOKSA.

(10) Following two years of zapooksa (saving), the seal's life is enhanced for more than ten years, and the loss sustained by the company in the time of "zapookskov" (about 8,500) is made good in the long run. The case may be thus stated: If the company had not spared the seals in 1826-27 they would have received from 1826 to 1838 (twelve years) no more than 21,000; but by making this zapooksa regulation for two years they got in ten years 31,576, and beyond this, can yet take 15,000 without another or any zapooksa.

(11) And in this case, where such an insignificant number of seals was spared on St. George (about 8,500), and in such a short time (two years), the result was at once significant every year; that is, three times more appeared than the number spared. The result therefore must be large annually on the island of St. Paul, where in consequence of the last orders or directions of the governor already four years of saving have been in force, in which time over 30,000 seals have been left for breeding.

On this account and in conformity with the above I here present a table, a prophesy of the seals that are to come in the next fifteen years from 7,060 seals saved on the island of St. Paul in 1835.

On the island of St. Paul, at the direction of the governor, a zapooksa (or saving) was made of 12,700 seals. That is, before the year 1834 there were killed 12,700 seals, and, on the following year, if this saving had not been made, according to the testimony of the inhabitants, no more than 12,200 seals would or could have been taken from the islands, it being thought that this number (12,200) was only one-twenty-fifth of the whole; but instead of killing 12,200 only 4,052 were taken, leaving in 1835, for breeding, 8,118 fresh young seals, males and females, together.

In making this hypothetical table of seals that are to come, I take the average killing—that is, one-eighth part—and proceed on the supposition that the number of saved seals will not be less than 7,060.

In the number of 7,060 seals we can calculate upon 3,600 females—that is, a slight majority of females. With the new females born under this zapooksa, I place half of those born the first year, and so on.

Females, in the twelve or eighteen years next after their birth, must become less in number from natural causes, and by the twenty-second year of their lives they must be quite useless for breeding.

Of the number of seals which may be born during the next four years of zapooksa, or longer, we may take half for females. This number is included in the table, and the males or holluschickie make up the total.

From table 2 observe that—

(1) Old females, that is, those which in 1835 were capable of bearing young, in 1850 must be canceled (minus). They probably die in proportion of one-eighth of the whole number every year

(2) For the first four years of zapooska, until the new females begin to bear, their number will generally be less.

(3) A constant number of seals will continue during the first six years of their zapooska; in twelve, these seals will double; in fourteen years they will have increased threefold; and after fifteen years of this zapooska, or saving of 7,000 in the first year, 24,000 may be taken from them; in the second, 28,000; in the third, 32,000; in the fourth, 36,000; in the fifth, 41,000. Thus in five years more than 160,000 can be taken. Then, under the supervision of persons who will see that one-fifth of the seals be steadily spared, 32,000 may be taken every year for a long time.

(4) Moreover, from the production of fifteen years' zapooska there can be taken from 60,000 to 70,000 holluschickie, which, together with 160,000 seals, makes 230,000.

(5) If this zapooska for the next fifteen years is not made for the seal's life, diminution will certainly ensue, and all this time, with all possible effort, no more than 50,000 seals will be taken.

Here it should be said that this hypothetical table of the probable increase of seals is made on the supposition of the decrease of females, and an average is taken accordingly. Furthermore, on the island of St. Paul, in 1836-37, instead of 7,900 seals being killed but 4,860 were taken. Hence it follows that these 1,500 females thus saved in two years, and which are omitted from the table, will also make a very significant addition to the incoming seals.¹

¹The reader in following the calculations of the bishop, as exhibited by this table, must not forget to bear in mind as he runs it over that it is arranged with a sliding scale of increase that counts steadily down from 1840 to 1849, and also a sliding-down scale of decrease by reason of natural death rates that works steadily across these figures of increase just specified.

I made this translation at Oonalashka, in the house of the Rev. Innokenty Shaishnekov, a son of that Shaishnikov which the bishop quotes on p. 131, *ante*. I took great care to preserve the exact English equivalent of the bishop's Russian text, and was aided very much by the Creole priest, who had that copy of Veniaminov's *Zapieska* in his possession, which I used.

"Deacon" Kazean Shaishnekov, the father of the Oonalashka priest, was the agent in charge of this island of St. Paul for the old Russian company from 1828 or 1829 up to 1854, when he died. He left a copious and carefully written diary, covering everything that transpired daily on the seal islands during all that period. A stupid and unworthy relative *actually took this precious MS. and had pasted it all over the doors, the walls, and the ceiling of his house on the island in 1860-1864*, and I saw a few of the smoke-stained sheets still sticking there in 1872. This is a species of vandalism that beggars adequate description.—H. W. E.

TABLE 2.—*Showing the number of seals that will visit the island in the next twenty-two (1837-1856, inclusive) years (a prophecy made by Tentaminor in 1844).*

Years.	1835.	1836.	1837.	1838.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.
1835	3,600	0	0	0	0	900	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,000	800	400	200			
1836	0	3,150	0	0			1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,000	900	700	300	100	
1837	0	2,755	0	0			918	918	918	918	918	918	918	918	918	918	918	900	805	750	500	300
1838				2,410			805	805	805	805	805	805	805	805	805	805	805	805	805	805	805	805
1839					2,110		450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
1840						1,845	From old arrivals.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.	From new comers.
1841							1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580
1842							1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985
1843							Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.
1844							1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130
1845							3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768
1846							900	900	900	900	900	900	900	900	900	900	900	900	900	900	900	900
1847							4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423
1848							Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.	Total new.
1849							725	725	725	725	725	725	725	725	725	725	725	725	725	725	725	725
Total females	3,600	3,150	2,755	2,410	2,110	2,745	3,565	4,285	4,898	5,323	6,000	6,805	7,490	8,333	10,734	12,369	14,153	16,148	18,216	20,820	20,165	19,358
Total males	3,400	3,150	2,755	3,410	2,110	2,745	3,435	4,215	4,102	5,378	6,000	6,735	8,010	9,297	10,716	12,331	14,147	16,132	18,181	20,824	20,665	19,342
All	7,000	6,300	5,510	4,820	4,220	5,490	7,000	8,500	9,700	10,700	12,000	13,540	15,500	17,630	21,450	24,700	28,300	32,280	36,400	41,644	40,200	38,700

From this table behold that—

(a) Every fifteen years from 3,600 females there can be received in sixteen years 21,700 seals; in sixteen years still more, and in twenty years 41,640.

(b) In the twenty-first year the incomes begin to diminish, provided that if in the meantime, or the following sixteen years, a certain number of young seals are not left to breed; and if every year a known number are left to breed, then in all following years the yield will never be less than 20,000 every year.

The foregoing chapter of Bishop Veniaminov was written in 1837, and closes his knowledge of the topic with that year. The "zapooska" of 1831, which stopped all killing except a few food seals for the natives in the seasons of 1835-1840, ran on in the following manner for St. Paul Island, until the restoration of the rookeries in 1846-1850. This is the only record extant, and I was fortunate in getting it.

*Procezdoytra Pooslnik Promissloo vie e droogich, sah 1835 goda zapooska. (List of the killing for furs and other purposes since the zapooska of 1835.)*¹

Year.	Bachelor skins (fur seals).	Pup skins (fur seals, gray).	Year.	Bachelor skins (fur seals).	Pup skins (fur seals, gray).
1835.....	100	3,952	1845.....	9,550	3,428
1836.....	1,200	2,840	1846.....	12,000	3,503
1837.....	2,000	2,020	1847.....	13,300	3,708
1838.....	2,560	1,380	1848.....	13,600	3,370
1839.....	5,000	230	1849.....	10,000	3,350
1840.....	5,350	650	1850.....	5,530	538
1841.....	7,100	900	1851.....	10,295	935
1842.....	8,800	1,260	1852.....	9,380	1,250
1843.....	10,050	1,294	1853.....	13,996	1,700
1844.....	10,150	2,632	1854.....	33,861	1,400

¹ This list above quoted, is a record kept by the Rev. Kazean Shaishnikov, who lived on St. Paul Island throughout the period covered by it. The autographic original was given to me to copy by his son, Father Paul Shaishnikov, and Kerick Artamanov, who had it in their possession on the 2d of July, 1890. No similar writing exists for the same period on the island of St. George.

Now, with this list in hand, the following table 1 of Bishop Veniaminov becomes intelligible. Without it, I have hitherto been unable to reconcile his statement that all killing was stopped in 1835, on the one hand, and on the other, with the figures which he gives below for 1835, and up to the end of his record in 1837; but, on turning to Shaishnikov's item for that year, we see that the bishop's total of "4,052" as taken that year on St. Paul really was only "100 skins of bachelor fur seals" and "3,952 skins of pups"—"gray" pups, or 5-month-olds, having by that time shed their black natal coats and donned their gray over-hair seagoing jackets. Thus we observe that the killing for market, was literally stopped. The pups were taken by the natives for food and clothing.

TABLE 1, PART 2.—Bishop Veniaminov's Zapieska, etc., showing the seal catch during the period of gradual diminution of life on the islands from 1817 down to 1837.

Year.	Taken from—			Year.	Taken from—		
	St. Paul Island.	St. George Island.	Total.		St. Paul Island.	St. George Island.	Total.
1817.....	47,860	12,328	60,188	1829.....	17,150	3,661	20,811
1818.....	45,932	13,924	59,856	1830.....	15,200	2,834	18,034
1819.....	40,300	11,925	52,225	1831.....	12,950	3,084	16,034
1820.....	39,700	10,520	50,220	1832.....	13,150	3,296	16,446
1821.....	35,750	9,245	44,995	1833.....	13,200	3,212	16,412
1822.....	28,150	8,319	36,469	1834.....	12,700	3,051	15,751
1823.....	24,100	5,773	29,873	1835.....	4,052	2,528	6,580
1824.....	19,850	5,550	25,400	1836.....	4,040	2,550	6,590
1825.....	24,600	5,500	30,100	1837.....	4,220	2,582	6,802
1826.....	23,250	-----	23,250	Total	464,259	114,665	578,924
1827.....	17,750	1,950	19,700				
1828.....	18,450	4,778	23,228				

It should be borne in mind as this table 1 is scanned, that during all this time, from 1817 down to 1834, all sorts of "halfway measures" were being tried without success by the Russian-American Company so as to try and save the seal life, and yet at the same time, continue a modified annual killing for shipment. They finally concluded, in 1834, as a result of a "half measure" of saving, they ought to get at least 20,000 to 25,000 skins of 1 and 2 year olds (taking them just as they came, for that matter); but after "all possible exertion," only 12,700 skins were secured, and the natives declared the ruin of these rookeries at hand if another such a season of driving and killing was inaugurated. The company then reluctantly but wisely ordered that cessation of sealing which Shaishnikov's list testifies to.

A study of this killing throughout the "zapooska" of 1834, on St. Paul Island, shows that for a period of seven years, from 1835 down to the close of the season of 1841, no seals practically were killed save those that were needed for food and clothing by the natives; and that in 1835, for the first time in the history of this industry on these islands, was the vital principle of not killing female seals recognized. It will be noticed that the entry for each and every year distinctly specifies so many "bachelor seals," or "holluschickov kotovie" ("Холосчиков Комови"). The sealing, in those early days, was carried on all through the summer, until the seals left in October or November, on account of the tedious method, then in vogue, of air-drying the skins. This protracted driving, after the breaking up of the breeding season by the end of July, caused them to take up at first, hundreds, and thousands later on, of the females in the same manner that they have been driven up during the last two seasons of 1889 and 1890; but they never spared those cows then, when they arrived in the droves on the killing grounds prior to this date, above quoted, of 1835.

In 1842-43 it will be observed that the killing is advanced to a total of 9,000 and 10,000 skins for these years, respectively; and, until 1854, this killing was not greatly increased per annum; then it was suddenly put up to 33,000 bachelor seals; and in 1857, the old natives assured me last summer, there were as many seals on the islands then, as there were when I recorded their area and position during 1872-1874; and, that from the year 1854, the Russian Company never had any more concern as to the supply of killable seals on the Pribilof Islands. They got annually thereafter all that was ordered taken each season.

While the supply of killable seals in 1890 was not near so low as that of 1834, yet it was really as bad—worse, perhaps, when the calculations of the old and new companies for the season's catch are taken into account, and with reference to next year, far worse, because the additional danger and source of injury from pelagic sealing is added to the cause for present declination of the rookeries. It did not enter into Russian calculations: the seals of Bering Sea were never seriously disturbed by these hunters until 1886.

The condition of the Pribilof rookeries to-day is such as to make the following imperative demands upon our Government, if they are to be saved, as they should be, from speedy ruin:

First. That no young male seals whatsoever shall be killed on these islands as a source of revenue, either to the public Treasury or to private corporations, for the next seven years, i. e., during the seasons of 1891-1898, inclusive.

This step is imperative: there was scarcely a drop of young male blood in service on the breeding grounds of either St. Paul or St. George throughout the reproductive season of 1890. There are no young bulls

left to speak of, on these hauling grounds, above the 1 and 2 year old grades—very few of the latter, and not many of the former. It will take at least five years of perfect rest for the scanty stock now left of this character in which to mature so as to serve on these breeding grounds; and it will be two years after this new service is first rendered before the appreciable gain can be well seen: and, in this necessary period of five years' growth not more than one-half of these young bulls thus maturing can be estimated as certain to survive the attacks of their natural enemies at sea—sharks, killer whales, etc.

Second. That all pelagic sealing in the waters of Bering Sea be prohibited and suppressed throughout the breeding season—no matter how, so that it is done, and done quickly.

This step is equally imperative. The immorality of that demand made by the open water sealer to ruin within a few short years and destroy forever these fur-bearing interests on the Pribilof Islands—the immorality of this demand can not be glossed over by any sophistry. The idea of permitting such a chase to continue where 5,000 female seals,¹ heavy with their unborn young, or busy with nursing offspring, are killed in order to secure every 1,500 skins taken, is repugnant to the sense of decency and the simplest instincts of true manhood! I can not refrain from expressing my firm belief that if the truth is known, made plain to responsible heads of the civilized powers of the world, that not one of these Governments will hesitate to unite with ours in closing Bering Sea and the Pacific passes of the Aleutian Chain to any and all pelagic fur sealing during the breeding season of that animal.

If these two steps are taken next year, and a perfect rest established throughout the breeding seasons on the islands, and in the waters of Bering Sea, for the next seven years, inclusive, then the restoration of these sadly diminished interests to their good form of 1872–1874 will have been well advanced, if not wholly realized by the expiration of the season of 1898.

Then, with revised and proper regulations for driving and killing, the twentieth century may open with another era of commercial prosperity for these islands: with pleasure and profit for those of us not only at home, but all over the world where fine furs are worn and valued.

In taking these two steps the Government can not divide the responsibility; it must assume the entire order and conduct of affairs on these seal islands of Alaska for the next seven years. The new lessees of 1890 should have a fair rebate. They are not to blame in any sense whatsoever, for the present condition of the rookeries and hauling grounds; not at all. They can not be asked to nurse these shriveled rookeries into shape: to feed and clothe the natives, and maintain an establishment on these islands for that purpose during this necessary period of rest; and if they offered to do it, this offer, for obvious reasons, should be refused.

The skins of a few thousand yearlings and pups which the natives may safely kill under order of the Secretary of the Treasury every year for food and clothing, just as they killed them in 1834–1843, inclusive, will, when sold by the Secretary of the Treasury, fully meet all the cost of caring for these dependent people properly, and enable them to live

¹Killing a pregnant female seal in 1890 destroys not only her life, but also that of her unborn young, and *that new intra uterine life which will at once follow this birth, on the Pribilof rookery to be born in 1891—thus destroying three lives—three seals at one indecent stroke!* Granted, for sake of argument, that the pelagic sealer gets every pregnant female seal, or nursing mother seal, that he strikes in the water—that he does not lose one—*does he not make the shameful showing of having killed some 5,000 seals to get 1,500?* Where is his escape from this brand of indecent butchery! He has none.

just as comfortably as they have been living. These food skins can be annually brought down to market on the revenue cutters, and these vessels can bring up the supplies of food, fuel, and clothing necessary for the natives after their purchase in due form by the Treasury Department.

The new lessees of 1890 in full belief, and warranted by official reports in believing, that they would get at least 60,000 prime skins in the first season and annually more thereafter, during the period of their contract, purchased the entire land plant of the old lessees, i. e., the salt houses, dwelling and school houses, barns, stores and goods, and divers chattels, and paid for it—together with the 81 small dwelling houses which the old company built for the natives' occupation—about \$65,000.¹ Those people have lived in these cottages, rent free, during the last eighteen years: and do live in them now under the same privilege, repairs and paint being also furnished gratis.

Under the present changed order of affairs the Government needs at once part of this plant above cited at least, and, for that matter, should not hesitate to take it entirely off the hands of the new lessees as the condition of the business now stands; also the money paid on account of the native houses should be promptly refunded by the Government to the new lessees: for, as I have said, there can not be any division of responsibility in the coming change of nursing these exhausted rookeries back to good order. The work has got to be entirely free from any and all suspicion of private intrigue and gain during the next seven years, or it had better not be undertaken. This will require the removal of everybody from these islands except the natives and the Government officers and employees. These resident men should consist of the existing staff of four Treasury agents, a physician for each island, and a school teacher and storekeeper also, in each village, including a mess cook, and laundryman.

On account of the remoteness of their situation, those officers and employees of the Government should be housed on these islands and supplied with rations and fuel free of cost to themselves: otherwise the enforced abnormal expense of living there would render their salaries absurdly inadequate. These supplies can be regularly purchased in San Francisco, every spring by the collector of customs of that port and sent up to the seal islands on the revenue cutters which annually have cruised and will cruise around about them throughout each coming season.²

While the Secretary of the Treasury is fully empowered by existing law, I believe, to take any or all steps necessary to preserve and protect these interests of the Government on the seal islands of Alaska, yet the passage of a bill substantially like the following draft will save him from some misunderstanding and doubt in the minds of our people as to the precise limit of his authority. He also needs the authority of law for the establishment of the school teachers, physicians, etc.

SUGGESTION FOR—

A BILL for the protection and preservation of the interests of the Government on the fur-seal islands of Alaska, Pribilof group, Bering Sea, Alaska.

Be it enacted, etc.

SECTION 1. That for the period of seven years from and after the passage of this act no fur seals shall be killed for their skins on or around the fur-seal islands (Pribilof group) of Alaska by any person or persons whatsoever: *Provided*, That the natives of

¹ See p. 225, Appendix.

² It is wholly unnecessary to enter into the details of this programme; they will all suggest themselves in due form to the officers of the Treasury Department and be promptly attended to when the work is undertaken.

said islands shall have the privilege of killing such young male seals only as may be required for their food and clothing and the construction of their small boats for their own use, which killing shall be limited and controlled by the Secretary of the Treasury, as he may prescribe: and he is hereby authorized to incur any and all proper and necessary expenses incident to the establishment, and maintenance and employment of one physician, one school teacher, one storekeeper, and one cook on each island: also for the proper housing of the natives, the Government officers in charge, and property, with rations for the same, and fuel, throughout the time specified in the foregoing section: *Provided, also*, That such food skins taken as above cited shall be sold annually for the defrayment in part, or in whole, of these expenses, at public auction, by the Secretary of the Treasury. Said food skins to be classified for such sale by the Treasury agent in charge, and accompanied by him from the islands until sold, as prescribed by the Secretary of the Treasury.

SEC. 2. *And be it further enacted, etc.* That no persons other than the natives and the authorized agents of the Government shall be permitted to occupy said islands, or either of them, from and after the passage of this act; and any person or persons who may attempt or attempts to violate this order of this section, or that of the first section of this act, shall be punished on conviction thereof for each offense by a fine of not less than \$1,000 or more than \$10,000, or by imprisonment not exceeding one year, or by both such fine and imprisonment, at the discretion of the court having jurisdiction and taking cognizance of the offenses; and all vessels, their tackle, apparel, and furniture, whose crew shall be found engaged in the violation of any of the provisions of this act, shall be forfeited to the United States.

SEC. 3. *And be it further enacted, etc.* That the provisions of the seventh and eighth sections of an act entitled "An act to extend the laws of the United States relating to customs, commerce, and navigation over the territory ceded to the United States by Russia, to establish a collection district therein, and for other purposes," approved July 27, 1868, shall be deemed to apply to this act; and all prosecution for offenses committed against the provisions of this act, and all other proceedings had because of the violation of the provisions of this act, and which are authorized by the said act above specified, shall be in accordance with the provisions thereof, and all acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

The existing law reads as below:

AN ACT to prevent the extermination of fur-bearing animals in Alaska.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful to kill any fur seal upon the islands of St. Paul and St. George, or in the waters adjacent thereto, except during the months of June, July, September, and October in each year, and it shall be unlawful to kill such seals at any time by the use of firearms, or the use of other means tending to drive the seals away from said islands: *Provided*, That the natives of said islands shall have the privilege of killing such young seals as may be necessary for their own food and clothing during other months, and also such old seals as may be required for their own clothing and for the manufacture of boats for their own use, which killing shall be limited and controlled by such regulations as shall be prescribed by the Secretary of the Treasury.

SEC. 2. *And be it further enacted*, That it shall be unlawful to kill any female seal, or any seal less than one year old, at any season of the year except as above provided; and it shall also be unlawful to kill any seal in the waters adjacent to said islands, or on the beaches, cliffs, or rocks where they haul up from the sea to remain; and any person who shall violate either of the provisions of this or the first section of this act shall be punished on conviction thereof, for each offense, by a fine of not less than two hundred dollars nor more than one thousand dollars, or by imprisonment not exceeding six months, or by both such fine and imprisonment, at the discretion of the court having jurisdiction and taking cognizance of the offenses; and all vessels, their tackle, apparel, and furniture, whose crew shall be found engaged in the violation of any of the provisions of this act, shall be forfeited to the United States.

SEC. 3. *And be it further enacted*, That for the period of twenty years from and after the passage of this act, the number of fur seals which may be killed for their skins upon the island of St. Paul is hereby limited and restricted to seventy-five thousand per annum; and the number of fur seals which may be killed for their skins upon the island of St. George is hereby limited and restricted to twenty-five thousand per annum: *Provided*, That the Secretary of the Treasury may restrict and limit the right of killing, if it shall become necessary for the preservation of such seals, with such proportionate reduction of rents reserved to the Government as shall be right and proper; and if any person shall knowingly violate either of the provisions of this section, he shall, upon due conviction thereof, be punished in the same way as is provided herein for a violation of the provisions of the first and second sections of this act.

SEC. 4. *And be it further enacted*, That immediately after the passage of this act the Secretary of the Treasury shall lease, for the rental mentioned in section 6 of this act, to proper and responsible parties, to the best advantage of the United States, having due regard to the interests of the Government, the native inhabitants, the parties heretofore engaged in the trade, and the protection of the seal fisheries, for a term of twenty years from the first day of May, eighteen hundred and seventy, the right to engage in the business of taking fur seals on the islands of St. Paul and St. George, and to send a vessel or vessels to said islands for the skins of such seals, giving to the lessee or lessees of said islands a lease duly executed, in duplicate, not transferable, and taking from the lessee or lessees of said islands a bond, with sufficient sureties, in a sum not less than five hundred thousand dollars, conditioned for the faithful observance of all the laws and requirements of Congress and of the regulations of the Secretary of the Treasury touching the subject-matter of taking fur seals and disposing of the same and for the payment of all taxes and dues accruing to the United States connected therewith. And in making said lease the Secretary of the Treasury shall have due regard to the preservation of the seal-fur trade of the islands and the comfort, maintenance, and education of the natives thereof. The said lessees shall furnish to the several masters of vessels employed by them certified copies of the lease held by them, respectively, which shall be presented to the Government revenue officer for the time being who may be in charge at the said islands as the authority of the party for landing and taking skins.

SEC. 5. *And be it further enacted*, That at the expiration of said term of twenty years, or on surrender or forfeiture of any lease, other leases may be made in manner as aforesaid for other terms of twenty years; but no person other than American citizens shall be permitted, by lease or otherwise, to occupy said islands, or either of them, for the purpose of taking the skins of fur seals therefrom, nor shall any foreign vessel be engaged in taking such skins; and the Secretary of the Treasury shall vacate and declare any lease forfeited if the same be held or operated for the use, benefit, or advantage, directly or indirectly, of any person or persons other than American citizens. Every lease shall contain a covenant on the part of the lessee that he will not keep, sell, furnish, give, or dispose of any distilled spirits or spirituous liquors on either of said islands to any of the natives thereof, such person not being a physician and furnishing the same for use as medicine; and any person who shall kill any fur seal on either of said islands, or in the waters adjacent thereto (excepting natives as provided by this act), without authority of the lessees thereof, and any person who shall molest, disturb, or interfere with said lessees, or either of them, or their agents or employees, in the lawful prosecution of their business under the provisions of this act, shall be deemed guilty of a misdemeanor, and shall for each offense, on conviction thereof, be punished in the same way and by like penalties as prescribed in the second section of this act; and all vessels, their tackle, apparel, appurtenances, and cargo, whose crews shall be found engaged in any violation of either of the provisions of this section, shall be forfeited to the United States; and if any person or company, under any lease herein authorized, shall knowingly kill, or permit to be killed, any number of seals exceeding the number for each island in this act prescribed, such person or company shall, in addition to the penalties and forfeitures aforesaid, also forfeit the whole number of skins of seals killed in that year, or, in case the same have been disposed of, then said person or company shall forfeit the value of the same. And it shall be the duty of any revenue officer, officially acting as such on either of said islands, to seize and destroy any distilled spirits or spirituous liquors found thereon: *Provided*, That such officer shall make detailed report of his doings to the collector of the port.

SEC. 6. *And be it further enacted*, That the annual rental to be reserved by said lease shall be not less than fifty thousand dollars per annum, to be secured by deposit of United States bonds to that amount, and in addition thereto a revenue tax or duty of two dollars is hereby laid upon each fur seal skin taken and shipped from said islands during the continuance of such lease, to be paid into the Treasury of the United States: and the Secretary of the Treasury is hereby empowered and authorized to make all needful rules and regulations for the collection and payment of the same; and to secure the comfort, maintenance, education, and protection of the natives of said islands, and also for carrying into full effect all the provisions of this act: *Provided*, That the Secretary of the Treasury may terminate any lease given to any person, company, or corporation, on full and satisfactory proof of the violation of any of the provisions of this act, or rules and regulations established by him.

SEC. 7. *And be it further enacted*, That the provisions of the seventh and eighth sections of an act entitled "An act to extend the laws of the United States relating to customs, commerce, and navigation over the territory ceded to the United States by Russia, to establish a collection district therein, and for other purposes," approved July 27, 1868, shall be deemed to apply to this act; and all prosecution for offenses committed against the provisions of this act, and all other proceedings had because of the violations of the provisions of this act, and which are authorized by said act

above mentioned, shall be in accordance with the provisions thereof, and all acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

SEC. 8. *And be it further enacted*, That the Congress may at any time hereafter alter, amend, or repeal this act.

Approved July 1, 1870.

[Amended March 24, 1874.]

Be it enacted, etc., That an act entitled "An act to prevent the extermination of fur-bearing animals in Alaska," approved July first, eighteen hundred and seventy, is hereby amended so as to authorize the Secretary of the Treasury, and he is hereby authorized, to designate the months in which the fur seals may be taken for their skins on the islands of St. Paul and St. George, in Alaska, and in the waters adjacent thereto, and the number to be taken on or about each island respectively.

In pursuance of this act of July 1, 1870, on the 3d of August 1870, the Secretary of the Treasury executed the following lease:

TERMS OF THE SEAL-ISLAND LEASE FROM THE GOVERNMENT.

This indenture in duplicate, made this 3d day of August, A. D., 1870, by and between William A. Richardson, Acting Secretary of the Treasury, in pursuance of an act of Congress approved July 1, 1870, entitled "An act to prevent the extermination of fur-bearing animals in Alaska," and the Alaska Commercial Company, a corporation duly established under the laws of the State of California, acting by John F. Miller, its president and agent, in accordance with a resolution at a meeting of its board of trustees, held January 31, 1870, witnesseth:

That said Secretary hereby leases to the said Alaska Commercial Company, without power of transfer, for the term of twenty years from the 1st day of May, 1870, the right to engage in the business of taking fur seals on the islands of St. George and St. Paul within the territory of Alaska, and to send a vessel or vessels to said islands for the skins of such seals.

And the said Alaska Commercial Company, in consideration of their right under this lease, hereby covenant and agree to pay for each year during said term and in proportion during any part thereof, the sum of \$55,000 into the Treasury of the United States in accordance with the regulations of the Secretary to be made for this purpose under said act, which payment shall be secured by deposit of United States bonds to that amount, and also covenant and agree to pay annually into the Treasury of the United States, under said rules and regulations, an internal-revenue tax or duty of \$2 for each seal skin taken and shipped by them in accordance with the provisions of the act aforesaid, and also the sum of 60½ cents for each fur-seal skin taken and shipped, and 55 cents per gallon for each gallon of oil obtained from said seals, for sale in said islands or elsewhere, and sold by said company; and also covenant and agree, in accordance with said rules and regulations, to furnish, free of charge, the inhabitants of the islands of St. Paul and St. George annually during said term 25,000 dried salmon, 60 cords firewood, and a sufficient quantity of salt and a sufficient quantity of barrels for preserving the necessary supply of meat.

And the said lessees also hereby covenant and agree during the term aforesaid to maintain a school on each island, in accordance with said rules and regulations and suitable for the education of the natives of said islands, for a period of not less than eight months in each year.

And the said lessees further covenant and agree not to kill upon said island of St. Paul more than 75,000 fur seals, and upon the island of St. George not more than 25,000 fur seals per annum; not to kill any fur seal upon the islands aforesaid in any other month except the months of June, July, September, and October of each year; not to kill said seals at any time by the use of firearms or means tending to drive said seals from said islands; not to kill any female seals or seals under one year old; not to kill any seal in waters adjacent to said islands, or on the beach, cliffs, or rocks, where they haul up from the sea to remain.

And the said lessees further covenant and agree to abide by any restriction or limitation upon the right to kill seals under this lease that the act prescribes, or that the Secretary of the Treasury shall judge necessary for the preservation of such seals.

And the said lessees hereby agree that they will not in any way sell, transfer, or assign this lease, and that any transfer, sale, or assignment of the same shall be void and of no effect.

And the said lessees further agree to furnish to the several masters of the vessels employed by them certified copies of this lease, to be presented to the Government revenue officers for the time being in charge of said islands, as the authority of said lessees for the landing and taking of said skins.

And the said lessees further covenant and agree that they or their agents shall not keep, sell, furnish, give, or dispose of any distilled spirituous liquors on either of said islands to any of the natives thereof, such person not being a physician and furnishing the same for use as medicine.

And the said lessees further covenant and agree that this lease is accepted, subject to all useful rules and regulations which shall at any time or times hereafter be made by the Secretary of the Treasury for the collection and payment of the rental herein agreed to be paid by said lessees for the comfort, maintenance, education, and protection of the natives of said islands, and for carrying into effect all the provisions of the act aforesaid, and will abide by and conform to said rules and regulations.

And the said lessees, accepting this lease with a full knowledge of the provisions of the aforesaid act of Congress, further covenant and agree that they will fulfill all the provisions, requirements, and limitations of said act, whether herein specifically set out or not.

In witness whereof the parties aforesaid have hereunto set their hands and seals the day and year above written.

WILLIAM A. RICHARDSON, [SEAL.]
Acting Secretary of the Treasury.

ALASKA COMMERCIAL COMPANY,
By JOHN F. MILLER, *President.* [SEAL.]

Executed in presence of—

J. H. SAVILLE.

This lease having terminated on the 1st day of last May (1890), the following new lease was executed in accordance with the law:

This indenture, made in duplicate this 12th day of March, 1890, by and between William Windom, Secretary of the Treasury of the United States, in pursuance of chapter 3 of title 23, Revised Statutes, and the North American Commercial Company, a corporation duly established under the laws of the State of California, and acting by I. Liebes, its president, in accordance with a resolution of said corporation adopted at a meeting of its board of directors held January 4, 1890:

Witnesseth, that the said Secretary of the Treasury, in consideration of the agreements hereinafter stated, hereby leases to the said North American Commercial Company, for a term of twenty years from the 1st day of May, 1890, the exclusive right to engage in the business of taking fur seals on the islands of St. George and St. Paul, in the Territory of Alaska, and to send a vessel or vessels to said islands for the skins of such seals.

The said North American Commercial Company, in consideration of the rights secured to it under this lease above stated, on its part covenants and agrees to do the things following, that is to say:

To pay to the Treasurer of the United States each year during the said term of twenty years, as annual rental, the sum of \$60,000, and in addition thereto agrees to pay the revenue tax or duty of \$2 laid upon each fur-seal skin taken and shipped by it from said islands of St. George and St. Paul; and also to pay to said Treasurer the further sum of \$7.62½ apiece for each and every fur skin taken and shipped from said islands; and also to pay the sum of 50 cents per gallon for each gallon of oil sold by it made from seals that may be taken on said islands during the said period of twenty years; and to secure the prompt payment of the \$60,000 rental above referred to, the said company agrees to deposit with the Secretary of the Treasury bonds of the United States to the amount of \$50,000, face value, to be held as a guaranty for the annual payment of said \$60,000 rental, the interest thereon when due to be collected and paid to the North American Commercial Company, provided the said company is not in default of payment of any part of the said \$60,000 rental.

That it will furnish to the native inhabitants of said islands of St. George and St. Paul annually such quantity or number of dried salmon and such quantity of salt, and such number of salt barrels for preserving their necessary supply of meat as the Secretary of the Treasury shall from time to time determine.

That it will also furnish to the said inhabitants 80 tons of coal annually, and a sufficient number of comfortable dwellings in which said native inhabitants may reside; and will keep said dwellings in proper repair, and will also provide and keep in repair such suitable schoolhouses as may be necessary, and will establish and maintain during eight months of each year proper schools for the education of the children on said islands, the same to be taught by competent teachers who shall be paid by the company a fair compensation, all to the satisfaction of the Secretary of the Treasury; and will also provide and maintain a suitable house for religious worship; and will also provide a competent physician or physicians, and necessary and proper medicines and medical supplies; and will also provide the necessaries of life for the widows and orphans and aged and infirm inhabitants of said islands who are unable

to provide for themselves: all of which foregoing agreements will be done and performed by the said company free of all costs and charges to said native inhabitants of said islands or to the United States.

The annual rental, together with all other payments to the United States provided for in this lease, shall be made and paid on or before the 1st day of April of each and every year during the existence of this lease, beginning with the 1st day of April, 1891.

The said company further agrees to employ the native inhabitants of said islands to perform such labor upon the islands as they are fitted to perform, and to pay therefor a fair and just compensation, such as may be fixed by the Secretary of the Treasury, and also to contribute, as far as is in its power, all reasonable efforts to secure the comfort, health, education, and promote the morals and civilization of said native inhabitants.

The said company also agrees faithfully to obey and abide by all rules and regulations that the Secretary of the Treasury has heretofore or may hereafter establish or make in pursuance of law concerning the taking of seals of said islands, and concerning the comfort, morals, and other interests of said inhabitants, and all matters pertaining to said islands and the taking of seals within the possession of the United States. It also agrees to obey and abide by any restrictions or limitations upon the right to kill seals that the Secretary of the Treasury shall judge necessary, under the law, for the preservation of the seal fisheries of the United States: and it agrees that it will not kill or permit to be killed, so far as it can prevent, in any year a greater number of seals than is authorized by the Secretary of the Treasury.

The said company further agrees that it will not permit any of its agents to keep, sell, give, or dispose of any distilled spirits or spirituous liquors or opium, on either of said islands, or the waters adjacent thereto, to any of the native inhabitants of said islands, such person not being a physician and furnishing the same for use as a medicine.

It is understood and agreed that the number of fur seals to be taken and killed for their skins upon said islands by the North American Commercial Company during the year ending May 1, 1891, shall not exceed 60,000.

The Secretary of the Treasury reserves the right to terminate this lease and all rights of the North American Commercial Company under the same at any time, on full and satisfactory proof that the said company has violated any of the provisions and agreements of this lease, or any of the laws of the United States, or any Treasury regulation respecting the taking of fur seals, or concerning the islands of St. George and St. Paul, or the inhabitants thereof.

In witness whereof the parties have set their hands and seals the day and year above written.

[SEAL.]

WILLIAM WINDOM, *Secretary of the Treasury.*

[SEAL.]

NORTH AMERICAN COMMERCIAL COMPANY.
By I. LIEBES,
President of the North American Commercial Company.

Attest:

H. B. PARSONS, *Assistant Secretary.*

In both of these instruments it will be observed that the old and the new lessees emphatically and unreservedly "*agree to abide by any restriction or limitation upon the right to kill seals under the lease that the act prescribes or that the Secretary of the Treasury shall judge necessary for the preservation of such seals.*"

Had there been any refusal on the part of the lessees to thus covenant and agree in this important regard, no seal island lease could ever have been sustained by its friends. The powerful and jealous opponents of this system would have carried the day in 1870 and again in 1890.

The wisdom and propriety of this express reservation in behalf of the Government, is now apparent; there is no legal or moral obstacle in the way of taking the action which I suggest for the restoration of these interests on the seal islands themselves: and, I firmly believe that a visit by some representative commission of Great Britain to these Pribilof rookeries next season will result in securing the prompt, hearty cooperation of that power with our Government in protecting these seals from slaughter in the open waters of Bering Sea, and certain portions of the North Pacific Ocean, during the breeding season of those animals.

SECTION VIII.

APPENDIX, CONTAINING THE AUTHOR'S DAILY FIELD NOTES, TOGETHER WITH OTHER MEMORANDA ILLUSTRATIVE OF THE PRECEDING SECTIONS, I TO VIII, INCLUSIVE.

I give *in extenso* the following field notes, because each one belongs to a particular place, day, and date for every sealing season that is to follow this one just ended, 1890. These notes in hand on the islands during the coming years, will aid the officers of the Government up there to observe and contrast the condition of the rookeries and hauling grounds as it shall change for better or worse hereafter.

For convenience and easy reference, I divide my notes into three subdivisions, i. e., "Rookery notes," "Hauling-ground notes," and "Notes on the driving and killing," together with a following of general memoranda.

ROOKERY NOTES—ST. PAUL ISLAND, 1890.

THE REEF AND GARBOTCH.

Thursday, May 22, 1890.—Spent the day in taking a fresh set of angles over this fine area of breeding ground. The sand has drifted very slightly from its boundaries on Zoltoi during the last eighteen years: but a large field of basaltic rocks has been uncovered by the holluschickie just wearing away the grassy covering, which opens the sand to the full play of the wind, and away it goes, down to the rocky foundations. The Reef Point from Gull Hill down to the extreme southwestern "drop" of Garbotch, is a solid lava table, with bubbles of hot eruption at later intervals, all pushed up from the sea. Then from Old John Rock down to the slopes of Parade Pinnacle is a thick superstratum of volcanic cinders, all reddish and fine, polished and smoothed by 1872, into that remarkable parade ground which I have platted carefully as it lies. Below Fox Cliff, strewn from the beginning of the Reef rookery, is a surface profusion of basaltic boulders, all knee and waist high, as a rule, though many of them are nearly sunken. This covering is characteristic of the entire Reef rookery and of Garbotch as far down as the intersection of the first point of rocks on that ridge southwest. But that northern slope of Garbotch is as smooth as a floor; a hard, cinder pavement that slopes down gently, yet rapidly, with its broad expanse to the sea. It looks as though it might have been graded by the hand of man. In the bight of this rookery and in the rocks awash at its point, 25 or 50 hair seals, *Phoca vitulina*, were basking, lulled into a sense of security by the hauling fur-seal bulls.

The whole of the Reef Point, south of Grassy Summit and Fox Cliff, was entirely bare of grass or any vegetation except lichens on rocks inaccessible to fur seals, and tufts of grass only grew on the points and cliff edges of the west shore. Tufts of grass and a few flowers appeared also over the "second drop." It looks to day as though much vegetation had crept in and over this field since then, but it is too early now to fairly observe it.

I gathered and gave to Palmer (for the Smithsonian Institution) a lovely sample of that characteristic green confervoid growth that appears so strange to me now, as it grows upon these hauling grounds and the rookeries. It seems to grow on the pulverized, shedded hair and fur comminuted. This makes a beautiful green carpet, and it appears to be in its best form at this time of the year; in other words, I take it to be in blossom. By the 10th to the 12th of June it shrinks and crocks up, and is not as bright as it is now.

I do not observe one bull here to-day, where I saw at least twenty at this time eighteen years ago. Then, these slopes of Garbotch were covered with angry, lusty bulls, in solid mass from the shore line to the ridge summit: so far over, even, that it required a club vigorously used before we could get up on Old John Rock, so as to look over and below. Then, they were fighting in every direction under our eyes; now, not a fight in progress anywhere; not bulls enough to quarrel. They are scattered widely over this same ground where in 1872 an interval of 10 feet between them did not exist; to-day there are intervals of hundreds of feet.

June 7, 1890.—The kelp on the submerged reef extends at least 1,000 feet to south-southwest from the rocks awash as indicated on my chart of the peninsula. This kelp marks a shoal everywhere rough and rocky within its borders, of a fathom to 6 fathoms depth, making it a very dangerous point for vessels, especially when picking up the land in a fog.

In this kelp, and over these rocks awash, the first bands of holluschickie that reach these islands every spring, sport and haul. A few of them may be seen here, at or about the arrival of the first bulls, and it is from this point that the first drives of the year are regularly made by the natives, for food, as early as the 10th to the 14th of May, some seasons: and by the 20th to the 24th of May in late or cold springs.

June 8, 1890.—This pencil sketch of the sweep of Garbotch I have made this afternoon with extreme care, since it shows to the best advantage, the real character of a first-class breeding ground for the uses of the fur seal.

The entire underpinning to the Reef and Garbotch is lava, basalt, in which at some points, notably on the Reef Point, much iron is embodied. This basalt is either dark purplish or reddish black, or else of light-gray tint; sometimes it is solid and compact: then again, thickly peppered with air holes and bubbles. On the point of Garbotch, in this picture, the breeding ground is a smooth slope down to the sea, from the summit, of polished breccia or soft, grayish black and dull-red scoria: worn to an entirely smooth surface by the attrition of the flippers of hauling seals. But, under Old John Rock, large bowlders are heaped promiscuously from the crest of the ridge to the surf: and this rough surface continues to the limit of the rookery under my seat by the edge of these bluffs by the "Cap." When I first came down to this rookery in May (21), 1872, I had great difficulty in getting in from behind to Old John Rock. Clubs had to be used to drive the bulls away; now there is nothing in the road there, or anywhere else on the crest of the entire rookery. It does not seem to me, as I write, that there are five bulls here to-day where there were 100 eighteen years ago. Lichens and mosses now growing on rocks where restless breeders annually polished them brightly then.

June 11, 1890.—Natives made their first drive of the year for the company this morning early, from the "Crest," of about 1,000 holluschickie. (See Note Book II, hauling grounds.) That picture opposite shows the

ground as it is really occupied by the bulls to-day. It is a fair sample of the occupation of every other one of the great breeding grounds of St. Paul. In 1872 there were right on the field of this drawing just as many bulls to be seen as there were rocks uncovered. Look at the scene now! This is a pre-Raphaelitic sketch. Visited Reef and Garbotch this morning; no change in bulls substantially from what is above noted; 2 cows on Garbotch, and Antone reports a pup on the Reef.

June 17, 1890.—The cows are hauling in small squads. This is about as in 1872; but not a single "polseeccatch" along the water margin of this rookery to-day; not a single one, and none upon the ground with the old males, where there is plenty of vacant space and nothing to oppose them. "Where are these half bulls which played so prominent a part in the settlement of the rookeries in 1872-1874?" I asked T. this evening and his assistant, Mr. R. They replied that they observed that this class of seals was not on the rookeries to-day. Mr. T. said that five years ago he saw the last of them, in so far as his observation went, at Tolstoi. On calling Mr. Goff's attention to it, he declared that he never observed a young bull attempting to land on the rookeries last year: and that he believed that the natives told the truth when they said to me in his presence at Northeast Point, that these animals were "quite all killed."

June 18, 1890.—How singularly regular the fog and drizzle is around and on these islands. Here, during the last two weeks, with only one or two brief intervals, the wind has blown from every point of the compass from a stiff breeze to a gentle air, yet the fog and the drizzle have been and are constant; just as it was in 1872. Not so much rain, but a steady drizzle daily beaten into your eyes and clothes by fresh to violent winds. A thick fog and "boozie" or drizzle does not prevent seals from landing; indeed, it seems to encourage them; but a heavy rain with hail or sleet will drive them into the water from the hauling grounds. They will, however, soon reappear after the cessation of this particular kind of meteorological disturbance.

June 19, 1890.—I myself have not seen a "killer" (*Orca*) yet thus far, but I am credibly informed that these enemies do appear here every summer later on and in the fall (when the pups are just beginning to go to sea) in greater and greater numbers every year. Also that within the last three years, two exceedingly severe October gales have prevailed, causing those deadly "surf nips" by which an immense number of pups were destroyed.

If it be true what I hear now, then between the "killer whales," the "surf nips," the killing of the half bulls, the killing of yearlings, driving from rookery margins, and pelagic hunting, the seals of these islands have little chance short of extermination, unless the remedy is applied at once.

June 21, 1890.—Again I look over the sea margin and not a single "polseeccatch" at the water's edge. In this connection, arises the strong assurance which the natives here gave Bishop Veniaminov in 1832, that these young half bulls which are driven up in the daily drives become thereby, utterly useless as breeders thereafter; that they are demoralized and broken up physically so that they lay around simply as outcasts or vagrants.

I took notice in 1872 of the fact that there was a large number of these apparently big, able-bodied bulls always hauled out and hauling with the holluschickie, and lying in squads along on the sand beaches whenever and wherever I went out in June and July during the inception and height of the breeding season. I then gave them only a





Old Bulls Fighting - June 1, 1872

Helmut
Garbottch
St Paul

A drawing from life by the author.

ADULT MALE FUR SEALS FIGHTING—THE SURVIVAL OF THE FITTEST—SIRE: GARBOTTCH, SAINT PAUL ISLAND.

This struggle between the breeding bulls was of incessant occurrence during the breeding seasons of 1872-1874; it never took place under the author's eyes on these rookeries during the breeding season of 1890; too few bulls, and they, in turn, with more cows than they desired to serve.

thought of their being "soured" and beaten bulls, since the rookeries were simply ringing with the noise of fighting "seecatchie;" and there were then so many bulls on those grounds, that the absence of these was not of the least account. But now, this feature comes up again to me; and, is not this plaint of the natives to Veniaminov in 1832, wholly correct? and does this not account in a very large measure for the vacancies on, and the astonishing somnolence of the scattered old bulls which I see to-day on the breeding grounds?

June 22, 1890.—The cows are just faintly showing themselves on this Garbotch side: and a little better, but not much, on the Reef line. They are falling far behind the record of 1872 at this hour.

June 27, 1890.—As the Garbotch side of this rookery is in full view from the village hill, I have come down here, since the above note. I can see the sweep of Garbotch, and that tells the story just as I have recorded it under Tolstoi and Lukannon. As this, however, was the first rookery I took the land angles of, so it will be the first one to be mapped with the cows on the 10th proximo.

June 28, 1890.—Made a tour of Garbotch and the reef this morning and find a feeble suggestion of the hauling of the cows in 1872-1874. Although there yet remain ten days ere the full limit to the coming of the females is reached, yet enough is suggested by the exhibition of the hour to make one very thoughtful—as much, nearly, as the extraordinary scant hauling of the bulls did early in the month. The wide empty areas between the podding females, in which nothing now is seen and upon which bulls were thickly clustered in 1872, all roaring and fighting incessantly, strike me most unpleasantly and foretells what the result of my survey must be in a measure.

The females are hauling very slowly, and that point below the "Crest" where the holluschickie were driven from this morning is swept bare—not a bull on it—showing that the result of the present method of driving from the outskirts or immediate line of the breeding seals, is to break up and dissolve that organization at that place.

The reef rocks which lay awash south-southwest from the Reef Point, seem to have a bond of submerged union with the south end of Seevitchie Kammen, for the sea breaks in a continuous roll across; and again from its north end to the coast of the Reef rookery, south-southeast from Reef Pinnacle, this reef continues. The water is bold enough all around outside of this.

July 1, 1890.—A circuit of the Reef and Garbotch this morning shows that the bulls are certainly inadequate for the service which their scant number and wild hauling entails upon them. Scattered harems of 65 and 70 cows are stretched along Garbotch, with but a single bull to each: while at the same moment there are vacant intervals of a hundred and hundreds of feet between them in which old bulls, all without cows, are placidly sleeping. *No fighting; no young bulls landing,* and the ragged rookery belt does not mend. The cows are slowly arriving, and will, until the 10th instant. Then I shall map them down. But as I view them to-day it is impossible to avoid the plain evidence of imperfect, dilatory, and feeble service, as contrasted with the vim and vigor here of 1872. Here the grass is rapidly covering the grand Reef parade of 1872-1874, and that confervoid growth which always appears immediately the next season after the one the seals cease to haul on an old hauling ground: I can not walk over this place without positive feelings of regret and astonishment. The alteration is simply immense, and all for the worse.

July 10, 1890.—In company with Mr. Goff and Dr. Lutz I made my

plotting of the breeding seals as they lay on the Reef and Garbotch to-day.

Here, at the very height of the breeding season, when the masses were most compact and uniform in their distribution in 1872-1874, I find the animals as they lay to-day, scattered over twice and thrice as much ground, as a rule, as the same number would occupy in 1872—scattered because the virile bulls are so few in number and the service which they render, so delayed or impotent. In other words, the cows are restless. Not being served when in heat, they seek other bulls by hauling out in great jagged points of massing (as is shown by the chart) up from their landing belts.

This unnatural action of the cows, or, rather, unwonted movement, has caused the pups already to form small pods everywhere, even where the cows are most abundant: which shadows to me the truth of the fact that in five days or a week from date, the complete scattering of the rookery organization will be thoroughly done. It did not take place in 1872, until the 20th to the 25th of July.

In 1872, these cows were promptly met with that service which they craved, and never hauled outside of their solid uniform, massing as they covered the rookery ground. The scattering of these old bulls to-day over so large an area is due to extreme feebleness, and combined in many cases with a recollection of no distant day when they had previously hauled thus far out on this very ground, surrounded by harems, though all is vacant and semigrass grown under and around them now.

It is impossible not to consider the question which this scene every moment prompts, What proportion of these old males which we see here now, overdone and scant in number—what ratio of their number will live to return next year? And if they do all live to return, what manner of good will they be? In many cases will they be potent at all? And again, not a single young bull to be seen on the breeding grounds or at the breeding margins. Where are they coming from? They, so conspicuous by their numbers and aggressiveness in 1872-1874. Where is the new blood which must take the place of the old and enfeebled sires before us, already failing to meet the demands of the hour on every side and ahead of us? Where is it?

The only answer which my study of this season gives me, is that there is no new blood mature enough left. The club and effects of driving have destroyed it: slowly at first, but surely throughout the last eight years, and rapidly during the last three of this period—especially rapid last year and at the present hour.

The pelagic hunter has lent his aid since 1885, to this destruction. He has destroyed the cows especially; but, the half bulls have been chiefly eliminated by driving, and the club, which has smitten nearly every one of them as "smooth" 4-year-olds whenever they appeared in the drives during the last ten years throughout the killing season.

In 1872-1874, when no driving was made from Southwest Point, from the Zapadniés, and all English Bay to the westward of Neahrpahskie Kammen, from Polavina, or anywhere between it and the hauling grounds of Lukannon, then there were reservoirs of young male life that were not drawn upon or disturbed from which a steady stream of new male blood for the breeding grounds could and did flow. That year here, when they first began to systematically drive from these places, marks the beginning of the decay and present deplorable condition of these rookeries of the Pribilof Islands. This extended driving began in 1882, and was firmly established in 1884. The pelagic killing began in 1886, and from that year these two agencies have gone forward hand in hand with this work of ruin and depletion.



A drawing from nature by the author.

AN OLD BULL CRIPPLED IN COMBAT, JULY 2, 1872.

A common sight in 1872-1874; nothing of the kind took place in 1890—not even a suggestion of it.

THE LAGOON.

June 13, 1890.—I think that there has been little or no change in the topographical character of this lagoon sea wall since my surveys of 1872-1874, except that in its height I think the bowlders are shoved up higher by ice floes, some 6 or 10 feet, perhaps. The lower segments of the rookery wall are unchanged, being just above surf wash at high water, and the conical choochkies are breeding in the chinks, just as usual.

The shoving up of these bowlders, which compose the lagoon sea wall on which this rookery is established, has also resulted in perceptibly shoaling the cove. Although the sand therein has shifted some, yet it all appears very natural to me.

The rookery itself does not show up any better than a ragged remnant of what it was in 1872.

My sketch shows the Lagoon rookery, the slough, the killing gang at work on the village killing grounds, and the Lagoon salt house, all as they appeared this afternoon at 4 p. m.

LUKANNON.

June 2, 1890.—A strong west-northwest wind blew all day yesterday, with snow, which covered everything white and wet last night. The wind still blew this morning: but the sky cleared at noon and the snow quit.¹ I made a visit to Ketavie, taking angles from the base of Black Bluff up to Lukannon Hill. I do not observe any great increase of bulls to-day; a few more: still, large areas are unoccupied by these animals right down to the water line. They have hauled at odd intervals as far back as they did in 1872, but no crowding into the same area at all.

Some bulls have ascended high up on the flanks of Lukannon Hill: but large intervals of from 50 to 100 feet of vacant ground lie between them, and this day is not more than two or three days in advance of the first arrival of the females. I can not avoid taking significant note of this point. These old bulls that now appear, are all in good physical trim outwardly; they look well.

The snow seems to surprise some of those bulls: they smell and smell at it, then roar angrily. A squad of small holluschickie were in the center of the rookery area on Ketavie, this morning.

June 12, 1890.—Very slight change in bulls during the last ten days. They have hauled here very wildly far back from the water, with large areas of 30 and 40 feet between them. Two cows in sight here; one "rusty," so must have been hauled out several days. She has a pup. Mr. Goff reported the arrival of a cow here, two days ago. Perhaps this is the one, so that this pup has not been born long; a few hours or a day at the most.

June 22, 1890.—A survey of Lukannon rookery this afternoon shows an astonishing apathy among the bulls, *and not a single half bull on the shore or in the water.* A few clusters of cows just along the water margin are all I see. They have been out at least four or five days, because they all look rusty. The newly-arrived cows are very conspicuous for a day or two after arrival by reason of their shining white abdomens and silvery-gray backs and necks. There is not a bright cluster of cows anywhere in sight to-day on Ketavie, Tolstoi, Lagoon Reef, or Garbotch. This shows how gradually and slowly these small clusters have grown in size since the first arrivals on the 4th and 5th instants.

¹ A fall of less than 3 inches; remained two or three days.

June 24, 1890.—Scarcely any change for the cows to-day. Those holluschickie on the sand have hauled up on the hill, about 100 feet, and are now sleeping in among the breeding bulls.

June 27, 1890.—Scarcely any change.

July 1, 1890.—I have passed three hours this afternoon marking and watching the service of the bulls in their harems. It is simply lifeless, languid, and fairly impotent; wholly so in many cases at this early date. What will it be ten days later, if it is so feeble now at the outset? Saw two "polseecatchie" at the water's edge and one at the rear. Where, indeed, are these animals? What, indeed, is on hand, or will be for the next six years to come, to supply the places of these scattered and already enfeebled sires of the rookery?

July 10, 1890.—I made a careful survey of the area and position of the breeding seals on Lukannon and Ketavie this afternoon in company with and aided by Mr. Charles J. Goff. On Lukannon, while there appears to be two-fifths as many cows as in 1872, yet the bulls do not average more than one-fifteenth of the number they showed at that time. No better on Ketavie, if anything, a shade or two worse. *No young bulls anywhere offering service or attempting to land on the rookery.*

KETAVIE.

June 13, 1890.—A comical picture was made to-day when, in the afternoon, the entire herd of mules, 10 in number, filed over from the village and pastured on the seal grass that grows on the deserted outskirts of the rookery at Ketavie. The old bulls in waiting paid not the least attention to them that I could see, while the mules were equally indifferent. I presume that such a pastoral scene as this has never been witnessed outside of these islands.

June 22, 1890.—As this is the time the cows begin to haul in appreciable numbers, I took a careful view at this (Ketavie) rookery to-day from that point of sight in the sketch opposite. I saw but three clusters of cows in all the sweep of this picture, and they in the foreground right between the first and second rollers as they came in. These pods were bexies of from 30 to 50 cows each, all thickly clustered around a single bull with all the other bulls stretched in somnolence around them: just as I recorded the state of affairs on Tolstoi yesterday; and, as I go over the field on Lukannon right after this, I find it precisely that way there. This apathy of the bulls, coupled with the total absence of the "polseecatchie" (or half bulls) on these breeding grounds at this hour is a striking contrast with that vim and fury that was so marked among the swarming bulls of 1872 on this and every other one of the breeding grounds of the Pribilof Islands. It is in order to record the fact that the cows are not hauling in anything like the numbers of 1872-1874. On Lukannon and the Lagoon the dearth of cows to-day is noteworthy: while, at Tolstoi, nearly every cow there this afternoon is as I described it yesterday: three small pods right down at the junction of rocks and sand under the cliffs; 250 cows perhaps on that whole ground this afternoon.

TOLSTOI.

June 12, 1890.—A tour to-day on Tolstoi shows little or no change in "seecatchie" from last date. I saw no cows. Quite a troop of holluschickie on the sand, just above surf wash, and beyond the drop of the rookery to the sand beach.

The old bulls are hauling here very wildly—way back 500 feet with 50 to 100 feet between them in many instances. *No fighting anywhere, and no young bulls at the water's edge.* The polseecatchie—perhaps I

A drawing from nature by the author.

KETAVIE ROOKERY FROM THE BLACK BLUFFS, SAINT PAUL ISLAND, JULY 7, 1890.



View looking N.W. over the abandoned hunting grounds and designated breeding grounds, to Ketavie Rock and Point in the middle distance; Polovina and Stony Point heads in the distance on the horizon.

shall see some of them when the cows begin to haul next week, but they were in swarms by this time during 1872-1874.

June 21, 1890.—An inspection to-day shows the odd scattering of cows as they haul, and which Mr. Goff early called my attention to as a great deviation from the habit which they exhibited in my work of 1872. As this is the date in which this class begins to haul in appreciable numbers, I now begin my daily examination of the manner and number in which the cows arrive.

They commenced just as they did in 1872—a few cows here and there by the 4th to the 6th of June; then by the 15th little clusters appeared of 10 to 50 along the water's edge: to-day, instead of that exhibition of solid "wave-like," "streak-like" spread up from the water's margin to the rear limits of the breeding grounds which they gave me in 1872, *I can see nothing of the kind; not even an approximation of that stage.* Still these animals have yet twenty days in which to fill up the rookeries as they did in 1872, and it is not the time to finally speculate on their coming or number—merely idle now to do so.

But, the behavior of the old bulls is extraordinary this morning at this time of the inflowing cows. They are listless; three-fourths of their scanty number stretched out sound asleep, while right alongside of these sleepers a pod of 15 or 30 cows will be closely clustered around a single alert bull, or one that at least is not inert and stupid. There are three such pods as that right under my eyes as I make this note, lying at the junction of the sand beach and rocks of Tolstoi rookery. *No such scattering of bulls and indifference was ever witnessed on any of these breeding grounds in 1872-1874. Then every bull was alert and furious in his struggles to get possession of at least one, if not all the females within reach.* Now look at them! Why, it seems to me that these bulls are enfeebled and sick. At least it is a most remarkable deviation from the method and order of first arrival of the females in 1872. Such a picture of perfect listlessness and indifference as this, from the beginning to the end of the season, never met anybody's eye on these breeding grounds then.

No young bulls anywhere along the water's edge, or back among the old bulls, widely scattered as they are, way upon the hill slopes of Tolstoi this morning, at least 550 to 600 feet away from these first cows—widely and thinly scattered old bulls: all of them now stretched out in sound sleep.

June 23, 1890.—This is the day in 1872 when the cows had hauled in sufficient numbers to impress me deeply for the first time as the season then advanced. At this time in 1872 the most casual observer would note the arrival of the cows as "coming up in families or streaks, as it were, from the water's line upon the ridge" (as per MS. note of June 23, 1872, made as I looked then at Garbotch slope). The peculiar "fanning" of the cows then, as they used their hind flippers made their resting places conspicuous at any moment to the eye as it glanced over the rookeries.

To day, it takes a sharp, trained eye to find the scant scattered pods of cows as they rest just above the surf margin: and, as for "hauling back" up on the ridge, not the first symptom of such a movement is in progress.

As you stand and look across the cove at the Lagoon rookery, not over 900 feet away, you can not see the least visible evidence of the landing of females this morning. I can make out a few scattered heads, but no concerted arrival of these animals: it was very obvious in 1872-1874 at this time of the season.

June 24, 1890.—That peculiar podding of the cows, which I noted on the 22d, still continues. The cows still cluster in groups at the water's edge, with no attempt yet made to haul up in long "wave-like streaks" to the high ground in the rear.

Strange, in this connection, is the hauling of these somnolent scant bulls. Why, several of them—yes, a dozen—are now up 600 feet back from these cows at the surf margin on the sand, and vacancies of hundreds of feet between them. *Not a fight in progress, and not a single young bull in sight at the landing of the cows.*

June 27, 1890.—I observed on Tolstoi the arrival of a few more cows, the first I have yet seen that wore the fresh attractive toilet of these creatures. They are still crowding in on the sand in that strange manner above alluded to, and still but a very faint advance made in any single spot toward filling up the ground, back from the surf margin. The bulls are still hauled in that wild manner which I have so frequently noted, and are sleeping stupidly everywhere, with the cows landing just around and below them.

June 30, 1890.—A survey of Tolstoi this morning shows the most striking want of alert bulls; that there are pods or harems of 60 females with only one bull; that the sand beach end is the chosen resort of the solid hauling of cows, while the rocks up in their rear are positively deserted. I do not see that the cows are arriving so as to make any considerable number of them show white and silvery. But the few that are here, are under full swing. The strange, wild hauling of old bulls, and the remarkable absence of the "polseecatchie" is still prominent. I see two half bulls at the lower end of the rookery ground, right under Fox Castle. These are the only examples of their kind on the field. I have been constantly saying to myself, "Now I can easily count every bull on this rookery that is here to-day." They certainly do look lost among the rocks in the rear and in the large pods of cows at the water's edge.

The cows are pupping: are caring for themselves precisely as I have hitherto recorded the act, in 1872, at this time.

July 1, 1890.—A survey of Tolstoi this afternoon shows little change during the last three days; if any, it has been an increased solidity to the belt of the females on the sand. I think their hauling here as they do, one of the anomalies of this all around extraordinary state of affairs.

As I again look at these old bulls hauled out here above those cows, 500 and 600 feet away from them, and not a half dozen bulls between them, I begin to think that perhaps they do so because a few years ago when they were here, cows then hauled out to them in solid masses from the water. They did so in 1872, I find by my maps. And so, perhaps, that is the season why they, the bulls, are out here again without any visible reason for their so being. It is the same way on the Reef and Garbotch, at Lukannon, and especially so at Zapadnié.

I took notice of a large proportion of small or 2-year-old females, and the usual slowness of hauling, compared with 1872, which was not at its greatest activity up to July 7.

The usual parade of foxes in and out among the breeding seals now presents itself. I saw one to-day running off with a fresh placenta, or "afterbirth," in its mouth. There is a marked diminution of the number of foxes, as contrasted with my notes of 1872. They have been mercilessly hunted during the last ten years: last winter Mr. Goff ordered a "zapooska" for their benefit and preservation. This season is one of unalloyed physical and mental comfort for Reynard. He has all the fresh meat, waterfowl, eggs, and beetles that he can eat, and the

delightful assurance that he is never shot at or trapped at this time of the year. At the present hour they are shedding, and they look scrubby enough. Generally, the old hair on the tail hangs the longest, even after all is renewed everywhere else on their bodies. Thus you constantly see around you now, a bluish-gray fox running off with a fluffy, dried-grass colored tail—a very odd-looking contrast.

July 7, 1890.—From a station on the bluffs overlooking the entire stretch of the cliff belt of the breeding seals at Tolstoi, I passed two hours this afternoon, intently observing the service which the bulls below were rendering. There were 67 bulls directly within distinct sweep of my vision: distinctly and widely separated; and these bulls had some 2,000 to 2,500 cows. It is fairly idle to attempt to express the perfect impotency of these overdone and feeble old males: sleeping or dozing nearly all of the time: and, on waking, teased by the females without arousing them in the least. I saw in these two full hours of attentive watching only three attempts to serve the cows by these 67 bulls, and each attempt was a languid failure. *Not a single half bull or polwecat* attempting to land here or anywhere else for that matter on the rookeries to day. How many of these cows are going off without impregnation if not served when in heat? Do they ever return for it? And if they do, where is that service to come from? Certainly not from those already useless bulls which are hourly growing weaker as the season culminates. I saw to-day a nubile female and an older one engaged at the same moment in teasing a languid old bull, which made an ineffectual attempt to satisfy one of them, and failed. I never witnessed such a scene in all of my observations of 1872-1874. Then there were twenty bulls where there is one now, and three times or four times as many cows. Late in the rutting season, about the 20th to the 24th of July, an occasional exhibition of languid impotence was seen: but, it made no impression on my mind other than to note the fact that here and there was a bull which was physically exhausted, chiefly from the effects of fighting. Still there were then so many virile bulls right around it, ready and eager, that it did not signify.

One of the odd orders at Tolstoi is the fact that the best massing of the cows now is seen down on the sand at the extreme extension of the rookery out toward Middle Hill. It gives one the only suggestion of what the compact solid massing of the rookery was in 1872, and which massing is now utterly lacking on these breeding grounds of St. Paul and St. George.

There are few cows, pups, and bulls to-day on that cliff belt of Tolstoi. Instead of an area of 36 feet in width, densely covered, as in 1872, to-day there is an area of only 1,750 by 10 feet covered, equal to 17,500 feet, or ground for 8,750 seals—bulls, cows, and pups—instead 36,750, as in 1872.

That parade ground up and over this breeding belt under the cliffs at Tolstoi is *wholly deserted by the holluschickie*. *Not a single animal has hauled out there upon its grassy patched surface thus far, this season.* Out near the point, is that queer climbing path up the cliffs from the sea to this ground. Here in 1872 I have sat for hours at a time watching the seals come up and go down in ceaseless files of hundreds and thousands, actually climbing up places so steep that it was all an agile man could do to follow them safely.

I saw about 50 or 60 holluschickie on the cliff steps to this path to day: but, none of them seem inclined to go up on to the old parade ground above. The natives call this particular locality "Bobrovya yama," or the "sea otter cave."

July 10, 1890.—Made a careful survey of the area and position of the breeding seals on Tolstoi this day in company with Mr. Charles J. Goff.

In July (14), 1872, this Tolstoi rookery held 225,000 bulls, cows, and pups. A startling decrease of nearly three-fourths or 72 per cent loss here since 1872, or of 162,600 seals!

ZAPADNIE.

June 19, 1890.—I think the bulls on Lower Zapadnie show the thinnest in distribution. Certainly this great rookery, which swarmed with rousing, fighting bulls, closely massed over all the breeding space mapped out on this ground at this time in 1872, is in a great decline. The few bulls that are here, are hauled out so widely and so far from the water—in places they are 1,000 feet. I think they act as though they were anticipating nothing. A few cows, perhaps four or five, are all that I saw this day here, and three on Upper Zapadnie.

I have fairly got this rough-surfaced rookery chartered to-day. It is a queer place to view the seals. They lay in curious little valleys and canyons which have been created by hot lava bubbles in prebiological days. But that scant distribution of the bulls in these places to day, puts me continually in mind of

"Some banquet hall deserted,
Whose garlands dead,
And guests have fled, etc."

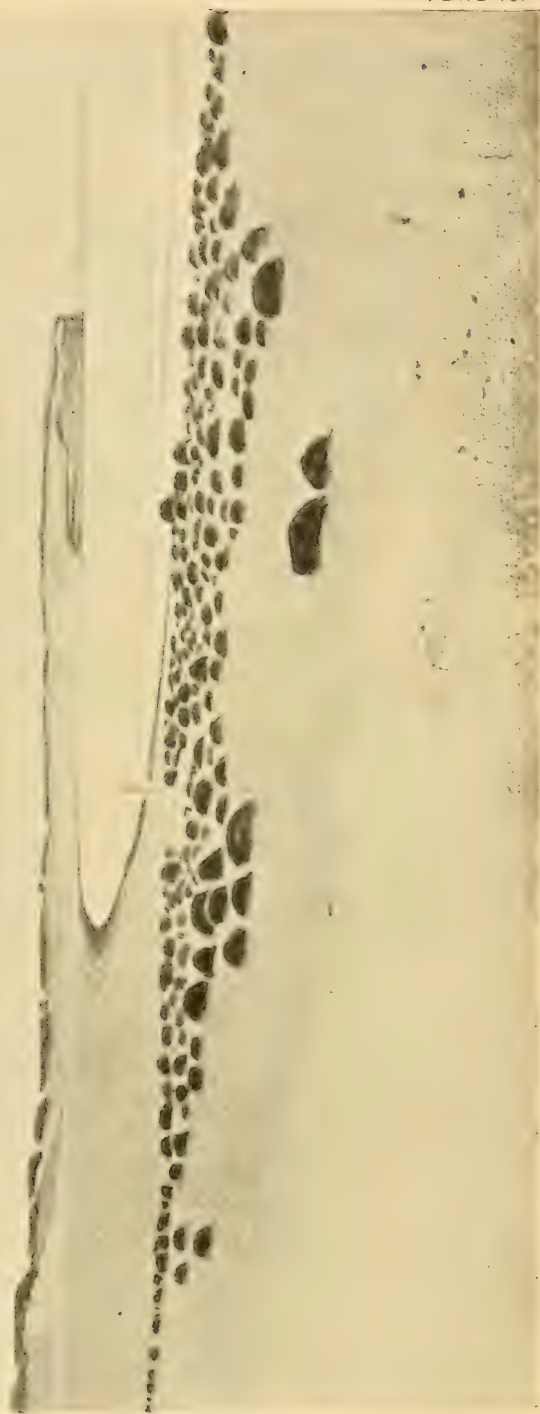
Upper Zapadnie is equally thin on its hill slopes, and what is more, the water's edge line is vacant at frequent intervals. There is an occasional roar and some characteristic "spitting," but *none of that desperate, incessant fighting that prevailed among the closely thronged bulls on all these places in 1872.* The rookeries to-day, on this occasion of the first arrival of the females, are positively quiet. The unbroken uproar that boomed night and day from them then in 1872, is not more than faintly suggested by what I hear now.

June 26, 1890.—I have not seen much of Lower Zapadnie to day—only a running survey from the sand beach—while I had a fine view of Upper Zapadnie and its beach extension. Upper Zapadnie shows the same decadence, but not so painfully marked, as Lower Zapadnie. The beach extension, however, is remarkably vacant, in so far as cows are concerned.

July 3, 1890.—The hauling of the cows on Zapadnie to-day is extraordinary in contrast with its appearance here in 1872 at this time, and only a week from the hour of its utmost limit of expansion. Really I can not see much increase since my notes last week. But, such rusty cows, such somnolent stupid bulls; such an abnormal average as 60 to 75 cows in the harems; while lots of sleeping bulls are all around, though only some 40 to 50 feet away from these harems, where the bulls in charge, are so feeble that they refused the advances of eager cows repeatedly under my eyes within less than twenty minutes after I had set a fixed watch on half a dozen right within my view and near by.

Driving as it has been done has the deplorable effect of widening and scattering the already too wide and scattered distribution of these breeding animals. I saw this result on the reef after it had been swept on the 1st instant. The same extending vacancies on the water line of this once great compact breeding ground is plainly visible to-day. Every little pod of holluschickie that creeps in now behind a harem, laying close up to it instinctively for shelter, is at once marked and swept out, up and into the drives. This huddles the cows into larger and larger masses, sweeps off and away the few surplus old males, and leaves the





A drawing from nature by the author.

MIDDLE HILL.

TOLSTOI HEAD

REEF POINT.

THE DESOLATION ON THE HAULING GROUNDS OF ENGLISH BAY, SAINT PAUL ISLAND, JULY 11, 1890.

View looking east from upper Zapadne beach extension, opposite Hair Seal Rocks, over to Tolstoi. Upon these abandoned sands the holtschickie fairly swarmed during the seasons of 1872-1874.

ground in worse and worse shape for a bad season at the least. This driving from the immediate vicinity of a breeding ground was never done after June 5, in my time. Then rarely, and only to get a few hundred seals early, as they first arrived for the natives' food. This always took place before any noteworthy arrival of the cows.

July 9, 1890.—I made a close reconnoissance of the breeding seals as they lay upon the ground at Zapadnië, both upper and lower wings, this morning immediately after the natives had driven the small squads of holluschickie which they alone find here now, and only in spots, laying up in close proximity to the cows. I went over at 4 a. m. purposely to see the *modus operandi* of the driving, and then to get a fair idea of the full expansion of Zapadnië as it stands to-day.

July 11, 1890.—In company with Mr. Charles J. Goff I visited and surveyed the entire sweep of Upper and Lower Zapadnië rookery to-day. * * *

It is impossible to convey the queer sense of utter desolation which the vacant seal area of 1872 on this fine rookery carries to my mind this morning. Grass and flowers are springing up over those broad areas back of the breeding grounds, where in 1872, thousands upon thousands of young male seals hauled out and over, during the entire season, without being visited by any man then, except myself. Nobody at that time ever thought of such a thing as coming over from the village to make a killing at Zapadnië. And then, too, those splendid areas of hauling ground in English Bay, are all grass-grown, mosses, lichens, and flowers, which in 1872-1874 so astonished Maynard and myself by their teeming squadrons of young male seals.

Judging from the appearance of the grass, I should say that the seals must have ceased to haul here to any great extent as late as 1883: and, by 1884-85, to have suddenly dropped out of the field in large numbers. That no seals have hauled in the rear of these breeding lines of 1872-1874 since 1878-79, is certain: because this area is now well sodded and sprinkled with a full crop of *Archangelica*, which never comes in sooner than eight or ten years after the seals have once destroyed it. This time of the regrowth of "pochkie" was well demonstrated to me at Zapadnië in 1876. There, in 1868, Morgan's sealing party built a salt house right in the center of a well-polished hauling ground of holluschickie. The seals at once, of course, abandoned a large space directly and indirectly dominated by this salt house, and the killing gangs. The grass upon this abandoned hauling ground of 1868, was pretty well tufted and established when I first saw it in 1872, and in 1876 small heads of the *Archangelica* began to sprout everywhere anew over it. This shows that eight years after the seals ceased to haul upon a hitherto well-polished area by them, plenty of rank grass was growing upon it with many flowering plants, and a beginning of a new garden of that rank, umbelliferous *Archangelica*, above specified.

POLAVINA.

June 3, 1890.—As there is not the slightest appearance of change to the sea margin of this bluff-banded rookery during the last sixteen years, nor is there ever likely to be, I simply redraw my original land angles of 1872-1874, establishing, however, two additional stations—one on the point at the grotto, B, and the other on the beach below at C. This will cover the showing of any change that the breeding seals may present on that portion of the rookery ground which can be altered by surf and ice-floe pressure during storms in the fall and the winter and early spring. The land angles of Little Polavina are precisely as they were in 1872.

June 4, 1890.—An odd seal bridge and grotto is on the extreme point of Polavina, and makes one of the queerest sort of subjects for the pencil. When I visit it in July I presume I shall find it tenanted with a harem, although it may be a thoroughfare, since the seals can haul up through it.

I take this sketch of Polavina Point from my station, C, just 300 feet below those bulls in the foreground, and which maps out, as they lay to-day, the southern limit of the present extent of these breeding grounds. On this flat of sand, just above surf wash, basaltic boulders, mostly small ones, are thickly strewn, with many pieces of driftwood. That remarkable reef table which projects out under Polavina Point, is well bared to-day, by the low tide and gives me a full view. It is a solid, flat table of purplish basalt, covered with innumerable pools of water and forests of sea weed, which fairly glisten as they are now bared, damp and dripping.

June 25, 1890.—I revisited this morning, that spot from which this sketch is taken. A few small clusters of females have arrived, as shown in the sketch on the other side of this page. The number of vagrant bulls dozing on this sand beach in the foreground has increased vastly, but the cows are very scant in number for the day. They are feebly suggestive of that wonderful massing which they were making on this ground in 1872 at this time.

I thought at the time when I established this station, C (on the 4th instant), that it was way below where the rookery would go this year, judging from the lay of the bulls then. I now see it plainly.

July 13, 1890.—Visited this rookery ground and surveyed the area and position of the breeding animals in company with Mr. Goff. * * *

My final survey of this rookery shows it to be one of the two rookeries which seem to have suffered only half in loss of form and numbers. I can not avoid the conclusion, however, that this rookery, like Zapadne, has been cruelly driven during the last four or five seasons: perhaps the last eight years, since the chief hauling grounds always laid up behind the breeding lines of Polavina. Therefore, when shrinking of helluschickie began, the scraping of the large semicircular edge of Polavina rookery commenced in earnest, since the young males naturally do here as they do everywhere else on this island to-day, lay up closer and closer to the lines of the breeding seals.

NOVASTOSHNAH.

June 2, 1890.—Came onto the great rookery ground this morning from the Arago. Made my headquarters in Webster's new house, and prepared for the day's work. A clear day with light north wind. I find the bulls here in as good or better number than on any other rookery of this island. Still there are large vacancies and several wholly deserted sections.

A greater number of sea lions than I expected to see—several thousands of them clustered principally on Sea Lion Neck and Northeast Point, although they haul all along the east, north, and west shores of this point. The bulls were in full rutting ardor. There were several cubs or pups newly born. Their stifled wheezing, roaring, deep gutturals and grunting groans come out into sharp contrast with the clear-cut voices of the fur seal bulls, which haul out here side by side with their huge cousins.

I saw very few holluschickie to-day, although I inspected every foot of the great rookery.

That slope of Hutchinson Hill which drops to the westward, is cer-

tainly the most imposing single sweep of seal ground on the islands. It is impressive and extensive. The seecatchie here to-day appear in as good numbers as anywhere else on St. Paul Island. Still I must truthfully add that they are in woeful contrast with what I have recorded here in 1874.

June 1, 1890.—These sand dune tracts at and around the neck of Northeast Point have changed character somewhat since 1872. Then everything on this high, bare sand knoll of to-day, which rises from the Big Lake and separates it from the surf-sand flat level of the neck, was grassed firmly over; but now, from some cause or other, sand has been blown up and over, completely covering the lower grassy hummocks or knolls. It leaves now, a desolate, deep sand ridge to cross and recross as you go to and from the point, and the surf also beats upon a wider spread of sand on both sides of the neck, washing completely across in storms with much driftwood and many small basaltic "donicks" or boulders interspersed in lines with the wash of the surf.

This sand is simply powdered volcanic rock, with a liberal admixture of comminuted sea shells and other minute marine conchological forms.

The Big Lake seems wholly as it was: so does the trail down among the sand dunes on its eastern shore. The genesis of a finely fixed sand dune here is as follows: First a heap of wind-rifted sand from its drying out above surf wash. Into this the seeds of the *Elymus arenaria* are carried: and, sprouting, throw the strong, deep roots of that coarse grass down deep, binding the heap as it were. This grass alone seems to possess the power of taking hold at first and successfully growing. The other plants and grasses can and do germinate, but the first strong wind thereafter raises the sand about or from under them so as to either smother them or destroy their roots; but this "wild wheat," the *Elymus*, has such deep-reaching roots, as pronounced in this respect as those of the alfalfa, that it can not be blown out, or blown under, very often.

But, when the *Elymus* has firmly anchored a sand flat, then a grass closely resembling our timothy or orchard grass takes hold in its company, and with several species of mosses and the creeping willows (*salix*) and wild pea vines, finally crowds the hardy *Elymus* fairly out within a few years, or at least leaves but a scanty remnant of its former exclusive holding. However, there are extensive tracts on St. Paul where the sand is unusually light, deep, and restless. Upon these areas, and on the killing grounds where the bodies of millions of seals have decayed, making a rich, hot compost out of the dry, sterile sand, there the *Elymus* grows strong and luxuriant, without a rival—nothing else can get in.

July 13, 1890.—I made my land survey of this point on the 2d and 4th of June: and from that time until this day, I have not been on the breeding ground. But now the hour having arrived in which to see the breeders at their finest limit of expansion on the ground occupied by them, I made this morning, in company with Mr. Goff, a careful, rod by rod inspection and survey of the field. Every section from point to point as we advanced, from station to station, was carefully platted on the chart, with a distinct memorandum of its massed depth: the land angles giving the exact number of feet of sea margin which each section possessed. In this way, foot by foot, we progressed around the entire circuit, jotting down every expansion and contraction of the breeding lines, and every vacancy. This is the only method by which a uniform, fair statement of fact, and estimate of the numbers, area, and position of these rookeries can be made. To attempt to carry in your mind an estimate over this irregular ground, and distribution of life upon its surface, is simply a physical impossibility; and an attempt

to measure this area with the life as massed upon it, with a tapeline, is equally abortive and ludicrous.

But, my angles, taken with a fine prismatic compass from my several stations established with initial base lines, locate these herds just as they rest upon the ground to-day. By having the topography all finished June 2 and 4, I now rapidly and accurately plat upon it, as I traverse the field, these herds, just as they lay under my eyes.

Thus, all guesswork is wholly eliminated, as it should be, from the exact location of the position and area of these rookeries. Then, upon this known ground of occupation, a sensible rule for estimation can be based.

July 26, 1890.—Daniel Webster is the veteran white sealer on these islands. He came to St. Paul in 1868, and, save the season of 1876 (then on a trip to the Russian seal islands), he has been sealing here ever since, being in charge of the work at Northeast Point annually until this summer of 1890, when he has conducted the killing on St. George. He spoke very freely this afternoon while calling on me, and said there is no use trying to build these rookeries up again so as to seal here, as has been done since 1868, unless these animals are protected in the North Pacific Ocean as well as in Bering Sea. On this point the old man was very emphatic.

Webster came ashore on St. Paul Island in the spring (April) of 1868, an employee of Williams & Haven, of New London, Conn. He took charge of the sealing then begun in behalf of this firm, at Novastoshmah, or Northeast Point. Hutchinson, Kohl & Co. had the only other party up there at that time. This was the first irregular sealing ever done upon this island since 1804.

Webster said that Hutchinson, Kohl & Co. and he took over 75,000 young male seals at Northeast Point alone, that summer of 1868: and only stopped work from sheer exhaustion of their men, who were not only physically "used up," but had used all of their salt, and had no suitable means left for saving any more skins.

When both parties stopped work, he said, that then no apparent diminution of the number of holluschickie was evident to any of them: and that this fact created much comment. He declared that there had never been so many seals on that ground since; that "although there was a fine showing of seal, Mr. Elliott, when you were there in 1872, yet there never has been so many there as in 1868."

He said that ever since 1876-77 he had observed a steady shrinking of the hauling grounds at Northeast Point—a very rapid contraction during the last six years, especially rapid since 1887-88.

He never agreed with the statement recently made of the great increase of seals over my record of 1872-1874; but on the contrary has always held that no increase ever followed it: and that he always told both the Treasury and company agents, whenever questioned, that there was a steady diminution. He said that when down in San Francisco last (about five years ago, winter of 1885-86) he was not asked any questions by anybody as to the increase of seals: and he volunteered no information. If he had been asked he would have spoken his mind freely.

Webster said that in 1872-1874 he was able to get all the holluschickie he wanted from that sand beach on the north shore of the neck at Northeast Point. "Never went anywhere else for them, or near a rookery." He said that the holluschickie never again came down upon the southern slope of Hutchinsons Hill after the season's work of 1868 closed.



A drawing from nature by the author

THE NORTHEAST POINT KILLING GROUNDS, SALT HOUSE, AND LANDING, SAINT PAUL ISLAND, JUNE 3, 1890.

View from Cross Hill: Webster's house, surrounded by the native house, chapel, and killing grounds in the middle distance; over them in the distance is Sea Lion Neck; the salt house and natives landing salt from the steamer *Argo*, in the middle distance to the right.

ON THE ROOKERIES—ST. GEORGE ISLAND.

NORTH.

July 19, 1890.—I came upon this breeding ground to-day after an absence of just sixteen years. I find the topography unchanged: the hauling grounds all grass grown together with the usual flowering plants that seem to follow the abandonment of hitherto polished ground laid upon by holluschickie.

The seals upon its breeding area are in the usual form and number characteristic of this season over on St. Paul—a scanty supply of old bulls: no young bulls in the rookery or outside: large scattered harems, and every evidence of imperfect service—in all these forms precisely as they are over on St. Paul.

But this rookery, which held 76,250 bulls, cows, and pups in 1874, has suffered a loss of only one-half of its cows and pups. Of the bulls, however, a vastly greater proportion, five-sevenths of them, are missing. This rookery was the largest on St. George in 1874; it has been so ever since, and is to-day, diminished as it is. But large as it is over here, there are only two on St. Paul smaller. One is the Lagoon, and the other Ketavie, though the latter was twice as large as this breeding ground in 1874.

July 25, 1890.—Captain Lavender and Dr. Noyes made a careful survey of the holluschickie that have hauled out here, since they were driven off on the 19th instant. They agreed that if driven to-day, this rookery would not yield 300 holluschickie of over 5½ to 7 pound skins.

July 26, 1890.—No increase of holluschickie on this ground. If I may believe the apparent honest statement of Dr. Noyes and Mr. Webster (agents of the N. A. C. Co.), this rookery has shrunk one-half from its margins of three years ago: and, it is greatly worse to-day, than it was at this time last year.

This is the testimony also of Mr. Goff as to the status of the St. Paul rookeries as between this season and last. It now points with my work to the certainty of a still further marked reduction in the form and number of the breeding seals next year: while the killable seals or holluschickie will simply be minus.

July 27, 1890.—The cows and pups in full swing of “podding;” the holluschickie scant in numbers and mixing up with the scattered harems; a small pod, chiefly yearlings, hauled out on the extreme western extension, and two other small pods at the “Raichka” and “Seraidnee” on this rookery—altogether not 200 7-pound skins.

I am surprised at not seeing the due proportion of yearlings out now that a rookery of this size should claim. At least 20,000 pups left this ground last October. Half of them should be back now as yearlings, and as such show up a thousand or two every day until the end of the season. I am therefore, inclined to think that the pups are suffering a heavier ratio of loss than in 1872–1874. They are now fewer in number, and their natural enemies, such as “killer whales” here and sharks in the North Pacific, and the “killers” there too, are just as numerous and voracious as of old. The loss, therefore, inflicted from this source would be more apparent now, than when the pups were twice and thrice as numerous. In 1872–1874 I estimated that about 1,000,000 pups left the Pribilofs every October and November in fine physical trim; and of this 1,000,000 *not over half of the number came back* next June and July as yearlings. To-day, judging from the scanty returns of yearlings, I

know that the loss in pup returns is far greater. It looks as though *not more than one-quarter are returning this season of 1890 as yearlings.*

There should be at least from 3,000 to 5,000 yearlings out on the hauling grounds of this rookery daily, now, estimating that only half of them, as in 1872, are or have been destroyed at sea since they left this ground of their birth last autumn. But raking and scraping the whole extent of this rookery to day would not produce a "drive" of 600 holluschickie of all ages, 450 of them to 500, yearlings, and the balance chiefly 2-year-olds.

I have been looking every day since the 15th instant, over the rookeries and hauling grounds for the percentage of yearling returns. By this time all those seals should show up if they are to show up at all this year. They all arrived here by the 20th of July in 1872-1874, and I presume now, this 27th day of July, that it is fair to demand a count.

July 30, 1890.—The pups nearest the water's edge on this rookery under the bluffs are all attempting to swim this afternoon. A high south-southwest wind has caused a heavy back swell, which throws water up and over into a series of odd yet perfect salt-water bath tubs, caused by the foundation of several basaltic basins in the beach margin of the rookery here. Above and below this place, those pups which are exposed to the full and direct wash of the surf, are not making any effort to play and swim in that water, but have crept higher up and are still crawling up, so as to get entirely out of the spray.

Most of the pups to-day, on this rookery, have "podded" back; some of them 150 feet from the sea margin, where, with their mothers, they are mixed up and mixing all the time with the holluschickie that are hauling.

The holluschickie are chiefly 1-year-olds; nine-tenths of the several pods hauled out here to-day are yearlings. A great many yearling females are halting down at the landings in and among the scattered harems, aimlessly paddling about. Their slight forms and bright silvery backs, white throats and abdomens, are shining out very brightly in contrast with the dark rocks, the dull brown and rusty coats of the "matkabs," and still rustier forms of the old "seecatchie." These young yearling cows finally drift up into the rear, join in the medley of sex and age there, and go and come with the rest as they go and come during the remainder of the season.

I have noticed this year, because I began at the outset to look for them, that the yearlings which come out in June were invariably males as far as I could see, whenever they were examined, as I had frequent opportunity to do, as they easily and often smother and fall in the pods into a sort of stupor which permits you to lift them by their hind flippers and drag them out of the way. But when the cows begin to arrive in full form and number, about the 1st to the 10th of July, then the female yearlings also appeared in the herds as a class for the first time.

This points to the natural fact that the young yearling males instinctively flock together and follow the older males on their return trip to the islands: while the cows attract the young females as a class—just as toddling boys will follow the older boys and men, while the little girls avoid them and flock with the young women and their elders of the same sex.

By the 20th of every July all the cows, nubile and maternal, have arrived, and that arrival brings in the last wave of yearling animals for the season. So that all of the seals that are to appear for the year are now on hand, have hauled out, and now finally haul out. It is this final and finishing arrival of the yearling cows that swells the numbers of

the yearlings as a class so markedly after the 5th to the 10th of July—sometimes as early as the 1st to the 5th of that month, if the season happens to be a very forward one. Still, I find that the records of the arrival of the females on the rookeries during the last twenty years, as they have been annually recorded on these islands, show that the cows came here every season with an amazing regularity, and precisely in this respect as I observed them in 1872–1874.

The old bulls are more irregular, varying as to the character of the seasons—favorable seasons, early in May; unfavorable seasons, only three or four days later—and all of them invariably on hand by the 1st of every June.

Since the holluschickie here, have been permitted to rest for a few days without being at once swept up, after landing, and over to the village killing grounds, they have become sensibly tamer; and like the foxes here, when trapping ceases, they seem to know that they are not going to be hustled over to the shambles again when we come in sight. To-day Captain Lavender, who is a very large man, and myself walked to within a few yards' distance from every pod of holluschickie on this rookery: and, save in case where the Captain happened to vigorously flourish his cane (in emphasis of something said) these animals gave no sign of rushing into the water or of stampeding.

This simply goes to prove that the "wildness" of these holluschickie of 1890, which some of the sealers attempted to tell me was a marked change in their natural habit of 1872–1874, is quite naturally due to the extraordinary change in the fashion of driving which the sealers themselves have instituted during the last six or eight years of increasing scarcity of killable seals. From the time, since 1881, when the first regular over driving began early in June until the catch of 100,000 was secured in July following, these animals have never been allowed to rest anywhere on the islands as they hauled out long enough to become wonted to the grounds. Naturally enough we find them "wild," especially so when there is not a tenth of the number on the ground here to-day of the holluschickie which we found here in 1872.

August 3, 1890.—The pups in that small area under the bluffs, where the surf has filled certain cavities so as to form incipient bath tubs, are now all swimming outside in the gentle swell that rolls in. They have learned to swim: but the great majority of their kind are still far back on the uplands to the rear, and, wholly unused to water yet. I notice that those pups on the sea margin which are not in the immediate vicinity of these "bath tubs," are still hanging aloof from the surf. They will, however, soon begin their water exercises, by the 13th instant at the latest, as they did so in 1872.

The number of yearling females that are loitering on the rookery ground, lolling over the rocks and nagging the pups, is larger than I have usually observed thus far, since the season for their arrival opened on the 15th of July last.

But the mixture to-day of all classes of holluschickie with the cows and pups is complete. It would be a matter utterly impossible to make a "drive" of 100 killable seals from this place to-day and not sweep into that "drive" as many cows and pups and demoralize things generally.

The number of holluschickie out this afternoon is not equal to half of what I observed here day before yesterday, during the prevalence of that southwest gale, which threw up a heavy, furious surf. When the ocean is troubled the breeding seals always haul out in greatest numbers. The breeding seals are quite uniform in their attendance, however, without much reference to weather, unless it be an abnormally

warm, sunshiny day; then the cows nearly all take to the water, leaving their pups with the bulls, behind them. They do not go far away, but lay in the rollers, idly scratching and swimming in the cool embrace of the sea.

I noticed one action this afternoon which has hitherto completely escaped my eyes. A young pup near these "bath tubs" under the bluffs, was eagerly endeavoring to get over the rocks and join those sporting pups which were so joyously splurging in and out of the pools there. But no sooner did the little fellow get fairly started than its mother would lunge after, and, catching the pup precisely as a cat does a kitten, would pitch it rudely back, sometimes full 3 feet at a swing, bumping it without mercy on the boulders. The pup would then, for a few moments, lay perfectly quiet, then start up suddenly, get a few feet under way for the pools again, when the mother would repeat the lesson just cited. I watched her check and bump this pup of hers against the rocks for nearly half an hour. Then seeing no sign of cessation of this action of the mother, or lack of desire of the pup to have its own way, I did not wait for the ending of the controversy. It shows very plainly, however, that so far from teaching their pups to swim, the mother seals try to keep them from rough water as long as they can, seeming to have an instinctive appreciation of the fact that a heavy swell and surf could and would drown their offspring when so young, should these little creatures happen to get out and within the reach of its breaking force.

GREAT EASTERN.

July 23, 1890.—I passed up above this rookery in going to Tolstoi Mees and the sea-lion rookery this morning. No holluschiekie, save a small pod, hauled out. I also observed that the holluschiekie have not put in an appearance on the North rookery either—have not hauled since the 20th instant: simply, because there are none left to haul. There are very few seals in the water. No "killer whales" about either. They were here in large numbers up to the 20th of June, then suddenly departed. Captain Lavender informs me that he has seen schools of "killers," hundreds of them, skimming along close to the shore between the village landing and the North rookery; that they have probably gone north into some of the bays there or river estuaries where shoal water permits them to calve and get food: and, then returning this way they hang around these islands for several weeks in October: then leave for the North Pacific; that they suddenly left this island on the 20th of June, this year. I, myself, have not been able to see one of these animals thus far this season: beginning at St. Paul, May 21, up to date.

July 26, 1890.—I made a thorough survey of this Eastern rookery in the morning, since now is the proper time to look for a showing of last years' pups or yearlings. I saw only about 600 of them (500 in one pod and the others scattered). There were also about 100 2-year-olds and a few 3 and 4 year olds—very few.

Some 6,000 pups must have been born on this rookery last June and July (1889), and half of them should be back this summer. Perhaps they will show up better. It is, however, not reasonable to expect to see more than half of them hauled out at any time, even now in the very height of their hauling season. I was much impressed, when viewing them at this time in 1872-1874 on St. Paul, by their habit of ceaseless travel out from, and then back into the sea; i. e., they were constantly coming up from the surf to haul 1,000 or 2,000 feet back, and

others were returning from the uplands, where they had been laying around, to the water for baths and food.

What is left of the cows and pups, as to numbers, on this breeding ground, as well as the other rookeries here, seems to be healthy and free from any visible physical disorder. The most unique feature of this rookery to-day is the hauling of some 450 to 500 sea lions—bulls, cows, and pups—on the surf-washed beach of its sea margin right under the bluffs. The breeding fur seals lay up just above that surf wash, while the huge yellow bodies of *Eumetopias* crowd close up to them from below on a narrow belt which only high water and a stiff wind can dislodge them from. They, however, never haul anywhere else out higher from the water than this, since their young can take to the water and swim in a few days at the longest, after birth.

Not so with the fur seal. Such a location means the death of most every pup born upon it from June until September 15, inclusive, whenever the sudden rising of a gale might raise, in an incredibly short time, a heavy, churning surf. But, after the middle of September the fur-seal pup has become pretty well used to the water and can swim well. Yet, severe gales, in October, have caught even these pups at that time so savagely as to destroy thousands of them, and their lifeless bodies will be thrown high up by the surf to decay on the rocks and sand.

It is a queer sight to see here to-day, those little black fur-seal pups podding hither and thither, rubbing up against the big sea lions in the most fearless and familiar manner, causing those animals no annoyance whatever, and arousing them not a particle. A very queer picture indeed, these small black clusters of fur-seal pups crowding in against the yellow bulk of the big sea lions.

STARRY ARTEEL.

July 20, 1890.—The green growing grasses, flowers, and conservae that fairly border this breeding ground to-day on this steep bluff slope—this odd rookery—makes a most startling change in its appearance, contrasted as it is in my mind with what it was sixteen years ago. Then a polished hauling ground, fully 1,000 to 1,500 feet deep, encircled the breeding ground, and restless troops of holluschickie in squads of hundreds clambered incessantly up and down the steep, abrupt slopes of Starry Arteel Hill. To-day it looks as though a seal never had pattered over those hauling grounds of 1873; and even now, where the breeders themselves are lying and podding, the ground is not wholly free from scattered vegetation.

The natives assure me that this rookery actually increased in 1876–1878 considerably over my lines of 1873–74; also the East rookery; but to-day it has shriveled up to half its numbers of that time and the East rookery to less than one-third.

Why the breeding seals should elect to haul up on this unusual spot in this queer manner is difficult to positively say, because there is more vacant space at North rookery or Little Eastern than is necessary for the reception of ten times as many as are here assembled. Perhaps, however, the drainage is so perfect that it meets exactly the wishes of the breeding seal, since it is compelled to rest from two to three months upon a single spot ere the work of reproduction is completed.

This rookery (and Zapadnië), are the only ones on this island thus far raided ashore by pirates. That high bluff on which the breeding seals rest, juts north-northeast about 800 feet sharp into the sea from the straight west and east trend of the north shore of the island. This

abrupt projection of the ground makes a perfectly snug shelter from human observation in the village, or from any other point east. There is no rookery and nobody living west of it; and unless one stands upon the extreme summit of the rookery bluff or west of it, nothing can be seen below.

Behind this Starry Arteel bluff, on its western face, just at and only a trifle above surf wash, is a water-worn cave—a small cavern in which a dozen men can huddle. Here, in 1886 a sealing schooner's crew systematically passed their days in hiding, and their nights in raiding the rookery. They worked some three weeks ere they were detected by the natives, who, in searching along the shore for driftwood, after the sealing season had ended for them, found the freshly-killed bodies of a number of cows at the mouth of this cave: the sealers had departed.

Again, at Zapadnié, in the month of August last year, 1889, a similar raiding of that rookery was attempted; but as the pirates' boats came in at 10.40 p. m. from their schooner, they were fired into, and the startled marauders turned about and disappeared in the fog. Zapadnié has been visited three times prior to this in that manner by pirates; but no great number of seals has been taken by them—a hundred or so perhaps. It is a chosen spot for the mauraders to anchor off from one-half to 1 mile at sea, where they have shot a great many seals. At no other rookery on either island, have they done so to any extent.

At Starry Arteel, in 1886, these cave pirates above described took several hundred skins—some 600. This is the largest haul made by illegitimate landing on either island.

July 27, 1890.—I made a circuit of this unique breeding ground to-day; climbed up through a few scattered pups, cows, and holluschickie, all commingled on its steep hill slope of breccia and cement, which these seals seem to love so well, happy as to drainage, and free from dust.

The podding of the pups here, since the 20th of July, has made the driving of holluschickie simply impossible from this place, for the mixture of all classes is thorough to-day.

I notice, also, that the effect of that peculiar driving (which has been in vogue here ever since the shrinking of 1882 caused its establishment) of the holluschickie is creating an undue extension of sea margin for the number of animals occupying it as a breeding ground. In 1873 this rookery was a compact, oblong, oval mass of breeding seals, 500 feet by 125 feet, in which my figures declared a gathering of 30,000 bulls, cows, and pups; to-day there is a straggling belt of 800 feet by 40 feet (a very liberal estimate) on which only 16,000 bulls, cows, and pups rest.

ZAPADNIÉ.

July 20, 1890.—I often wondered in 1873, why this little rookery over here, was always the best hauling ground on St. George. I now believe that it is due to its location on the south side of the island, where the scent and noise of the breeding seals must appeal strongly to those bands of holluschickie that are upward bound from the Aleutian passes for St. Paul Island. The largest and best drives are always secured here, i. e., when taken from any one place on the island. The rookery was one of the two smallest on St. George then, and is a small one to-day, and is the only one on the south side of that island.

It was here to-day that the evidence of excessive cow driving (which can not be avoided if the holluschickie are to be secured) was plainly given by our finding in the fresh track of the "drive," made this morning, just as we came on the ground, several pups feebly bleating for

their mothers, who could never answer in time, even if they ever came at all.

This podding of the pups, on and after the 15th and 20th of July every year, makes it simply ruinous to drive a day after that date. The holluschickie now are so few in number that they do not haul out by themselves as they were in the habit of doing when they were in abundance, but mix in at once after they land with the straggling cows and podded pups. As the season advances and this podding progresses the mingling becomes still more and more effected, so that by the 24th or 25th of July it becomes impossible to drive from any rookery margin without getting hundreds of cows in the drive of a thousand holluschickie. Comment is needless: the impropriety of the act asserts itself.

July 24, 1890.—It was off this rookery, September 1, 1874, that the first pirate or pelagic sealer began operations since the seal islands became the property of the United States. This schooner, the *avant courier* of that destructive fleet of 1886–1890, was the *Cygnét*, of San Francisco, Capt. D. Kimberley; and the *San Diego*, of San Francisco, Capt. E. P. Herendeen, was the next craft in order, having paid Otter Island, near St. Paul, a visit of that doubtful character designated as piracy, in 1875.

August 1, 1890.—A careful review of this rookery to-day, disclosed some 1,200 holluschickie: half of that number apart from the cows, the other half commingled with the podded females and their young. Nine-tenths of this squad of holluschickie were yearlings.

I observed, not only here but on all the other rookeries, a strange absence of the proportion of 2-year-olds which should show up now. The fact that 25,000, possibly 30,000, yearlings were killed last year after the 13th of July, may account for this. It simply shows, however, what an empty shell now remains.

The condition of these breeding seals at Zapadnie, barring their scant numbers, is good, physically. The pups and cows have podded out in some places nearly 1,000 feet back, up and away from the sea. These pups on the uplands so far back will not get into the water much earlier than the 1st of next month: while a few on the beach margin are now swimming and learning to swim.

The heavy surf of yesterday and the day preceding has not injured any pups here, as far as I can observe. They are all safely hauled up out of its fury. When, however, they fairly get under way in swimming at first, then such a storm catches thousands of them unawares and destroys them.

ON THE HAULING GROUNDS—ST. PAUL ISLAND.

May 21, 1890.—The first drive for food of the season was made this morning on Seevitchie Kammen by the natives, and about 300 holluschickie were taken. In 1872, on May 14, I made the following note: "First drive of the season made to-day. Some 200 holluschickie from the point on or near the Reef. They drove slowly, but well. Strong northwest wind, and dry." Substantially the same time in arriving now as in 1872.

June 11, 1890.—The first regular business drive of the season was made this morning at 3 a. m. from the crest on the Reef rookery. The natives made this drive of about 1,300 holluschickie, half of it made up of mostly 3-year-olds, some "long" 2 and a few 4 year olds, the balance (a large proportion of it) "long" yearlings and "short" 2-year-olds. The drive was made from the south slope of the crest where, about 150 feet

back from the surf on the rocks, these animals had hauled, having slipped in between the breeding bulls which are widely scattered there on the sea margin. This ground, when visited by myself four or five hours later, was filling up again with holluschickie, showing clearly that the act of visiting and driving from this point early this morning, has had no effect in preventing or delaying the continued hauling of this class of seals. Five hundred and thirty-nine skins taken; 60 per cent rejected.

These old bulls, by the way, on the rookeries behave now as they did in 1872, precisely. They are a little shy and sensitive when they first haul up in May or late in April, and for the next ten days thereafter; but by the 15th to the 20th of May they have become so settled that they will not leave their positions, but boldly face and defy you when you walk down to them to inspect their lines of hauling. Not a single bull on any one of these seven breeding grounds of St. Paul, from the 22d of May up to the hour of the completion of my survey of them, manifested the least fear of my presence when I was in their immediate vicinity.

There are, however, always a number of bulls that haul on the outskirts of these well-defined rookeries which I term "vagrants," because they have no location or nerve. These bulls will scuttle away precisely as the holluschickie do.

June 15, 1890.—During the last ten days, while inspecting the land angles, and bulls on the several breeding grounds of this island, I have paid careful attention to every squad of holluschickie that has appeared: and, except as to numbers, I do not observe any change up to date in their habits, or of hauling early in the season, from my notes of 1872.

These early squads appear just above the surf margin in English Bay, just in back of the breeders on Lukannon, Ketavie, and the Reef. They are captured by the natives just in the manner I described as characteristic of the work so early in the season of 1872, and they are driven overland also in the same method, except that the drivers use whistles occasionally, instead of bones, grass, etc., to start the lagging herd.

There is not much change, however, in the method of handling the skins after they are taken, which is also done exactly as I have described it. A white man now supervises the clubbing. Now a team of mules and a full-sized Studebaker farm wagon is busy in carrying the skins from the field to the salt houses; and two men easily do this part of the work to-day, which required all hands to do, in 1872. In 1874, carts and mules were first employed for this purpose, and these teams aforesaid, soon followed.

At 8 a. m. a report came down from Northeast Point which declared the presence of two marauding schooners up there, with their boats down, sealing. This is the first notification of the kind for the season. Mr. Goff and I started at once for Novastoshnah with four selected men. I went with him because, independent of the legitimate errand, I desired to personally experience a ride upon a two-wheeled cart, as he rode in a gig drawn by a team of mules. The road is bad, very bad, and will require considerable work laid out on it before it is fit even for slow driving over in any vehicle. Thus far, the mule-back ride is best: and, after all, I prefer my own legs.

We arrived at Webster's house at 12.30 p.m., after traveling against a stiff northeast gale charged with rain and hail the whole way. The two natives stationed there on watch, were not clear in their understanding of the vessel which they saw yesterday: because it was at one time a "steamer," and at another a "schooner," etc. We came to the

conclusion that it was, and is one of the several steam whalers that are known to be cruising in Bering Sea this season.

Peter Peshenkov, one of these watchmen, said that yesterday was a fine day, still, and semiclear. He went around the entire circuit of the rookery, carefully inspecting the sea margin. He says that he found about 200 holluschickie hauled immediately up on the north side of Sea Lion Neck. He says that nowhere else was there any holluschickie, except a few polseecatchie on the beach just below the south shoulder: and, everywhere else, outside of the straggling old bulls, nothing. Peter and Carp Booterin came into the house during the afternoon while the storm was in progress, and talked to Mr. Goff and myself freely over the condition of this rookery, as well as the others.

June 16, 1890.—Webster House, 9 a. m. Carp Booterin and Neon Mandrigan made a circuit of Northeast Point this morning. They report to Mr. Goff no sign of vessel landing or sealing anywhere on the circuit. They say that there are about 300 holluschickie on the Staff Bight: about 200 good ones on the north slope of Hutchinson Hill, and a few, very few, at or near the South Shoulder. I came down on foot to the village, giving Polavina a survey along outside, so as to see the old and new seal grass on that famous parade. It is somewhat too soon to arrive at a conclusion: but what I saw, and noted, causes surprise.

Suppose you had, sixteen years ago, stood on an eminence overlooking a sheep pasture three-fourths of a mile in length and one-fourth to one-half a mile in width: this lot filled with a flock of sheep so full as to fairly whiten with their bodies the whole surface of the green earth upon which they slept, grazed, and stood in groups. Then to day to stand again upon the same eminence, overlooking the same ground and life, and see nothing but a few lonely, wide-scattered bands of sheep, and these so few in number that it requires no effort to count them one by one. That desolate impression made thus upon you, is precisely the impression that these hauling grounds of St. Paul Island make upon me to-day. Perhaps the next month may improve matters, but Mr. Goff says that it will not.

June 17, 1890.—I made a review of the abandoned site of Nah Speel rookery this morning. The last bulls and cows hauled here in 1886. In 1872-1874 there were some 8,000 bulls, cows, and pups here, with 400 feet of sea margin, 40 feet deep. In 1876 they had fallen off to less than half that number, having gone over across the way to Lagoon rookery.

This abandonment gives me a good basis for an estimation of the time it takes for nature to remove the traces of seals hauling on the rocks. These rocks of Nah Speel rookery, under my feet this morning, were in 1872-1874, so polished by the flippers of *Callorhinus* that nothing save the shiny basalt, olivine, and gray lava was to be seen; to-day, they are literally covered with yellow and gray lichens: and, were it not for the evidence of those seal-grass tussocks up above them, a practiced eye would not, could not, suspect the previous existence of a breeding rookery on them. And this all effaced in less than twelve years, partially by the lapse of the first six, then wholly within the last five years. How important it is, therefore, to have these breeding grounds correctly surveyed at frequent intervals: so that ebb or flow of this seal-life tide can be truthfully registered. Certain it is, nothing can be definitely trusted to memory in this respect.

June 17, 1890.—On the Reef and Garbotch. *Where are the polseecatchie, or half bulls?* Where, indeed, are those young 5 and 6 year old bulls which were literally swarming at the water's edge of these

breeding grounds in 1872, trying to land and repelled in vicious battle offered and waged by the old bulls? *Then, thousands and thousands of these young bulls were incessantly essaying to land on the rookery sea margins, and were as incessantly fought off by the elder, heavier see-catchie then in possession of the water's edge.*

I have been carefully watching the field this morning, on these two great breeding grounds. The cows are arriving; and, it was at this time and occasion, in 1872, that the polseeatchie appeared, as I have above noted. *But, not a single example presents itself to my eye this morning.* Where are these young bulls which must step in next year to supply those vacancies which the law of nature is to create in the ranks of the old bulls? These seals are not here to-day; will they appear later?

There has been no change in the numbers of the old bulls on the rookeries since the 10th instant: none whatever; and there are frequent intervals on these sea margins to all these rookeries where vacancies exist from 15 to 40 feet wide between the located old bulls. Thus every inducement is offered to a young bull to land without the fear even of being obliged to fight savagely, which must have prevailed in its mind in 1872, and which then, did not deter it from incessant attempt to land on the breeding ground.

Are these young half bulls all gone? If so, then everything else will soon follow, unless the check is applied. Then, again, in this connection, let me put it on record as I come in now from the field that *none of the scattered bulls now hauled out on the rookery grounds, are those known as half bulls, or polseeatchie.*

Only 78 skins taken from the drive at Northeast Point to-day. First drive of the season up there.

June 19, 1890.—I ascended the basaltic ridge between Lukannon sands and the village lakes this morning between 8 and 9 o'clock. *Not a single seal, old or young, on these hauling grounds and sands of Lukannon.* From the summit of Telegraph Hill I had a full sweep of English Bay. Only a small squad of perhaps 150 holluschickie under Middle Hill, and another small pod at the intersection of the sand beach with Tolstoi rookery.

A small drive from English Bay was made yesterday; some 300 skins taken. The first drive from Northeast Point yesterday gave only 78 skins. Whether this trouble begins on the rookeries or on the killing grounds, I have to find out, and it is important to know.

Not a single holluschak of any age whatsoever on Zoltoi sands this day, and there has not been a killable seal thus far there this season.

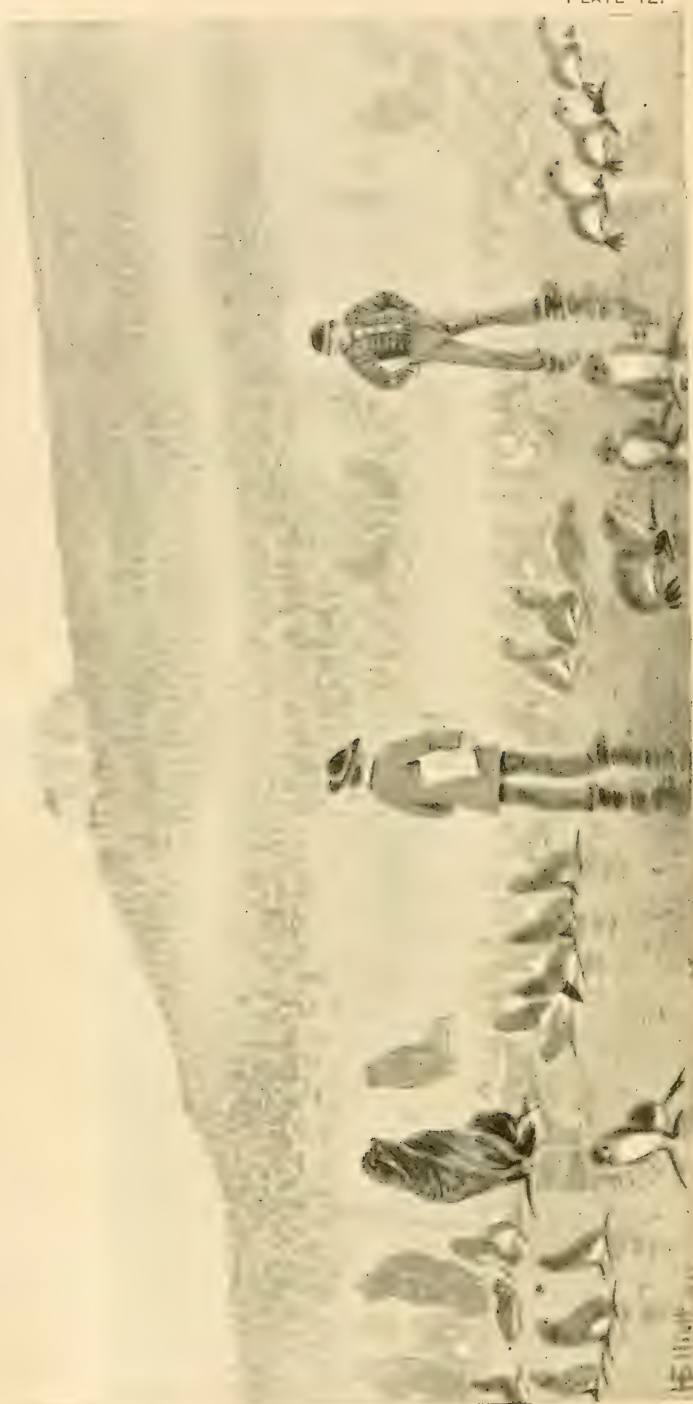
June 21, 1890.—From the high sand dunes of Tolstoi, I have a full survey of English Bay. A few hundred holluschickie only, under Middle Hill: and right down under me at the intersection of the sand beach with the breeding ground of Tolstoi, are a few more, 200. The weather has been good for hauling ever since the last drive (17th) from this place, yet it has not filled up any better than this.

From this time on, the killable holluschickie should appear in as good or better number up to the Fourth of July—better form than they will thereafter. In other words, the best classes of these killable seals, viz, the 2, 3, and 4 year olds, were here, now, in their finest form and number for the year, during the seasons of 1872-1874.

From the Volcanic ridge I had a clear view of Lukannon beach and hauling grounds. Not a seal of any age upon it, and the weather superb for seals to haul in—cool, moist, and foggy.

Sunday, June 22, 1890.—Fine weather for hauling continues, but the





A drawing from nature by the author.

FUR-SEALS HAULING ON THE REEF PARADE GROUND, SAINT PAUL ISLAND, SEPTEMBER 20, 1872.

This was an every-day sight on this ground sixteen years ago, between the 9th of June and the last of September: it so continued until 1879. The seals in the foreground are "gray pups"; the mist is caused by the hot breath of the seals—a seal-breath fog.

seals do not haul. Not a single seal on Zoltai sands this morning. There has not been a holluschak there up to this date. This spot was the never-failing resort of the natives in 1872-1874, according to my own observation. Sometimes two drives of thousands each would be taken, one right after the other, in the same morning, from this place right under the village, at this time in June. Every seal would be swept off from the sands of Zoltai, then in the early hours of a morning like this—a drove of anywhere from 3,000 to 5,000, and even more holluschickie of all sizes and thousands permitted to hustle into the water at the moment of driving. Then after breakfast, at 7 o'clock, I would again go up to look, and behold! these sands of Zoltai, which only a few hours earlier *were swept bare of every seal*, were *now fairly covered* with a fresh swarm of holluschickie; and which, later in the day, might be driven up to the killing grounds not more than 1,000 feet away, provided that the day was a favorable one for work, and the men on the killing grounds were not unwilling to meet the increased labor.

Now, not a single young male seal has hauled on Zoltai thus far this season (June 22, 6 a. m.). This is the day and hour of the season in which to see the holluschickie in their best form and number as to all classes, except the yearlings. Therefore, this vacancy on Zoltai sands, on Lukannon beach, and the uplands of Volcanic Ridge, on Ketavie uplands, on the sands of English Bay, on those of Polavina, and the utter solitude of those of Southwest Point and of Novatosnah makes a deep impression on one who has, like myself, stood upon them all in 1872-1874 and observed the swarming platoons of young male seals then existing—now entirely vanished.

Yesterday, when the work on the killing grounds closed, only 3,010 skins had been taken, and every little squad of holluschickie that has showed itself above surf margin on this island has been secured to get even this pitiful number. The same ruthless driving in 1888-1889 secured, in the same time, thirteen thousand odd skins. At this rate of decrease, of less than one-quarter, and the season for hauling far better than it was last year, what indeed will be the catch next year? Not more than a few hundred. These are facts which the status of the hour declares and which can not be sensibly overlooked at this finest season of the catch.

Then, too, the utter shift of method in driving which characterizes the present from the past. Now, with the solitary exception of the small drives from Middle Hill, every drive has been right from the borders of the breeding rookeries—from right in and among the old bulls as they lay in waiting for the incoming females. This fact in itself is a most eloquent pointer to the truth—to the utterly depleted condition to-day of these hauling grounds and their abundant reserves of 1872-1874.

At this time in 1872-1874, inclusive, I never glanced over at Zoltai sands but I saw holluschickie coming and going from and to the sea in steady files and platoons. I never looked over the broad sweep of English Bay beach from the high sand dunes of Tolstoi but to see the same sight, only in vaster, greater form and numbers. So, too, as I viewed the beach and volcanic ridge of Lukannon Bay and at Polavina it was an impressive spectacle: and the sand reaches of Northeast Point were simply alive with the restless multitudes of holluschickie that were hauling out there, and into the sea.

I do not observe to day, except at Middle Hill, the least, the faintest suggestion even, of that past. Will it improve? The 20th of July will tell the whole story beyond speculation or cavil.

Sunday afternoon.—From the fact that this morning opened warm, clear, and with bright sunshine, I did not expect to see any hauling of the holluschickie. It has been the first day since the 12th instant, that has not been suitable for hauling. The weather hitherto, has been excellent. Lukannon beach is as bare as it was yesterday, and the two small pods at English Bay remain at the close of the day, just as they were hauled yesterday—no more of them. I rather expected to see them all in the water, since it has been so warm, the first warm day of the year: but they were not.

It thickens up this evening and becomes cool. Not a seal on Zoltai sands this morning, and not one seen during the day.

Monday, June 23, 1890.—Those two pods of holluschickie, which I have observed under Middle Hill and Tolstoi during the last two days, were driven up this morning. I began an itemized account of percentages—the number driven up in each pod, and the number turned out to the sea or rejected from it.

Pod.	Number driven.	Number taken.	Pod.	Number driven.	Number taken.
1 a....	-----	-----	7.....	61	15
2.....	79	9	8.....	50	15
3.....	27	7	9.....	47	7
4.....	37	8	10.....	39	9
5.....	61	15	11.....	46	6
6.....	46	10	12.....	69	9

a Pod No. 1 I did not get a correct count of, so it is omitted.

Eleven pods of 561 animals driven up; 110 of them killed or one-fifth taken, or 80 per cent turned away! All under 7-pound skins, with the exception of a few wigged 4-year-olds and a dozen or two old bulls. This gives a fair average of the whole drive to-day, some 2,500 animals, since 518 only were taken. At this time in 1872, with the same standard of nothing under 7 pound skins, only 10 to 12 per cent were turned away!

To-day all the seals taken, with the rare exceptions of a few 4-year-olds (11-pound skins), were 3 year-olds (7½-pound skins). Not one 4-year-old in twenty taken, and a remarkable absence of 2-year-olds.

Those turned away (nearly 2,000) were 95 per cent at least, "long" and "short" yearlings. A few 5-year-old, and a very few 6-year-old bulls. A very, very few 2-year-olds also.

A small pod of holluschickie made their appearance close up under the bluffs of Zoltai, 100 to 150 of them, at about 11 a. m. This calls to my mind, Where have those tired seals gone which were driven this morning, and let loose from the pods on the killing grounds into the Lagoon slough, from there, direct to the sea? Where do they go? Do they haul up again? Yes, everybody says so: and I do not know anything to the contrary, and do know a great deal in affirmation. Then, if that be so, *these seals spared to-day may be driven to-morrow: to be spared again, and driven next week, and so on all over the island through the season.* What indication, then, really, have we of what number of fresh holluschickie really arrive from this time forth, if these released seals are to continually present themselves anew as they do? So, as matters go, we will note the steady increase daily, of discarded seals in the drives, together with the new arrivals or freshly driven seals, throughout the killing season.

In 1872-1874 this proportion of rejected or turned-away seals from all the drives up to the 1st of July was not over 10 or 12 per cent of the whole number driven. Now it is between 70 and 80 per cent; and 95

per cent of the rejected yearlings will require six years of rest ere they are fit for rookery service. This is the status at the present moment on these killing grounds, and this also must be considered in the light of the natives' positive declaration in 1834, that this repeated driving renders the spared male seals wholly unfit for rookery service.

How many of these released seals this morning have been driven over this road before this season? On the 17th instant the last drive prior to this one to-day, was made from Tolstoi and Middle Hill. Seventy per cent of that drove was turned away; and now, to-day, the same ground is driven from again, and 80 per cent is turned away. I shall observe the rest of the drives very closely. At this rate of increase, where will the driving be in July, when the yearlings then begin to haul in bodies?

June 21, 1890.—A drive this morning from Zoltoi bluffs of about 500 all told, and also pod from the Reef, 750 coming. Yesterday morning at 7 o'clock, there was not a single holluschak out on Zoltoi bluffs: but in less than three hours after the killing began on the Lagoon flats, and the turning out from the pods there, I observed that holluschickie were hauling under the bluffs at the intersection of Zoltoi sands, the first that have hauled there this year. They drove from there on the 14th instant last year. Now, the query can not leave my mind, Were any of those spared seals of yesterday hauling up soon thereafter at Zoltoi? Look at the map and observe the significance of the surroundings. Everybody in 1872 and everybody to-day admits that these seals which we released from the drives haul up again, are driven over, released, and still driven again and again throughout the season. In 1872, on this St. Paul village killing ground, such a 5-year-old bull was pointed out to me by Chief Booterin.

At 7 a. m. I went down to the killing grounds and followed the podding and clubbing of the entire drive brought up from the Reef crest and Zoltoi bluffs this morning. The Zoltoi pod arrived on the ground long before the Reef pod—two hours sooner. It was made up largely of polseecatchie and yearlings, the oldest bulls of the season, 6 and 7 year olds: and, 17 in this pod were many bulls which the natives said had come over from the Lagoon killing yesterday. They knew them as they pointed them out to me by certain clubbing marks.

The following are field notes of the podding and clubbing of the drive made from Zoltoi and the Reef June 24, 1890.

[Killing began at 7 a. m., ended by 9.30 a. m.]

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	53	13	6	21.....	28	12	1
2.....	39	14	4	22.....	34	9	3
3.....	41	12	2	23.....	25	6	2
4.....	48	12	3	24.....	36	11	5
5.....	27	11	3	25.....	47	15	4
6.....	54	20	4	26.....	50	12	3
7.....	30	15	3	27.....	29	9	4
8.....	42	10	4	28.....	34	7	3
9.....	52	12	3	29.....	17	7	1
10.....	40	16	2	30.....	37	8	4
11.....	39	13	3	31.....	20	8	2
12.....	27	7	1	32.....	52	11	1
13.....	36	10	2	33.....	38	10	.....
14.....	61	14	7	34.....	46	14	.....
15.....	46	10	3	35.....	24	9	.....
16.....	40	10	5	36.....	28	15	.....
17.....	35	9	3	37.....	30	15	.....
18.....	36	14	6				
19.....	35	12	4	Total..	1,566	426	96
20.....	38	13	3				

Seventy-one per cent of this drive was rejected. Every 3 and "smooth" 4-year-old taken, and every "long" 2-year-old. Nothing under or over that grade.

The seals released this morning were exclusively yearlings, "short" 2-year-olds, and the 5 and 6 year old half bulls or polseecatchie. No "long" 2-year-old escaped, and so, therefore, many 5½ and 6 pound skins will appear in this catch. There was a notable absence, however of 2-year-olds in proportion, and the bulk of the catch was 3 year-olds, as was yesterday's killing with a very large number of 4-year-olds in proportion to the whole number of skins taken.

In the afternoon I took a survey of Lukannon Bay and its hauling grounds. Not a seal on the beach, except a half dozen half bulls abreast of the Volcanic ridge. Thence over to Tolstoi sand dunes, where I saw about 600 or 700 yearlings, conspicuous by their white bellies, and a few killable seals sandwiched in another small pod under Middle Hill.

The only record which I can find of any driving upon land to slaughter other seals than the fur seal is the curious relation in Charlevoix's account of his voyage to North America (*Journal of a Voyage to North America*, vol. i, 1761, pp. 222-226). Speaking of the seals of the Gulf of St. Lawrence, under date of March 21, 1721, at the close of a rather lengthy but quaint description of them—"sea wolves," as Charlevoix calls the *phocæ*—he says: "Lastly, I have been told that a sailor having one day surprised a vast herd of them ashore, drove them before him to his lodgings with a switch, as he would have done a flock of sheep, and that he with his comrades killed to the number of 900 of them. *Sit fides penes autorem.*" This is the only authenticated (?) record which I can discover of any driving of the *Phocidae* to land killing grounds away from ice floes or the sea margin.

The sea elephant, *Macrorhinus*, is driven, it is true, but *only a few yards inland* from the subtropical beaches of California or the forbidding shores of Antarctic Kerguelen and Herd's islands. Like the hair seals, they are usually knocked down wherever they are surprised by the sealers. I think the seals above alluded to as driven by Charlevoix, were *Phoca vitulina* or *fætida*.

I should remark that the driving of the seals has been very carefully done, no extra rushing and smothering of the herd, as was frequently done in 1872. Mr. Goff began with a sharp admonition and it has been scrupulously observed thus far by the natives. This dropping of exhausted seals along the road in 1872-1874 was a matter which then aroused both Lieutenant Maynard and myself in 1874. The agent of the Alaska Commercial Company then promised to correct the evil. But it will always require the eye of the Treasury agent to rest upon this feature of the business since he is the executive head in this small community, unique and isolated, and he should be.

June 25, 1890.—An inspection of Zoltoi Beach this morning, does not show a single seal upon this famous hauling ground. Yesterday morning, a small drive of considerably less than 500 was taken from the rocky eminence just to the southward of this spot, being also the first drive made from there this year. When driven in such fine sealing weather as that now prevailing, in 1872-1874, these sands in less than an hour afterwards would begin to fill up again with fresh arrivals from the sea: and often, after the lapse of seven or eight hours after the first drive had been made, to meet an additional demand, another drive would be ordered from the same spot and duly driven. I did not see this morning a single seal sporting in the waters of Zoltoi Bay, and the only

A drawing from nature by the author



LUKANNON SANDS, SAINT PAUL ISLAND, JULY 7, 1890.

View looking up to Stony Point from the foot of Lukannon rocky. In 1872 these sands were fairly alive with hunting bachelor seals; in 1890 the best exhibition that they ever made is here depicted. The telephone line between Northeast Point and the village runs up here, and Podavay Sopka is in the middle distance. The Stony Point salt house is directly across Lukannon Bay in the middle distance, near the point.

one in sight was right under the village bluffs where I stood by the flagstaff.

June 25, 1890.—I went up at 6 a. m. to the killing at Tonkie Mees, or Stony Point, where, *ever since 1879, the seals that have hauled at Polavina, and on the sand beach between and toward Lukannon below, have been driven for slaughter.* A small herd collected this morning, and only 263 taken. The balance, some 500 or 600, were turned back to the sea. The selection was made in the same manner as yesterday, and the same class of seals spared. *An enormous number of 5 and 6 year old bulls were in it for the whole number driven, even greater than that I recorded yesterday.* I tallied these pods thus: Pod 1, 76 driven; 9 taken, all 3 and 4 year olds. Pod 2, 35 driven; 9 taken, all 3 and 4 year olds. Pod 3, 56 driven; 16 taken, all 3 and 4 year olds.

Then, after the killing gang had finished and started to return to the village at 8.30 a. m., I proceeded up to Polavina, following the seal-drive path made by the natives early this morning. I observed at Stony Point, or Tonkie Mees, the spared seals, as they were released from the pods, plunge back into the surf, and to my surprise most of these seals headed directly back for Polavina, jumping in rapid "dolphin" leaps and swimming rapidly. As I walked along I repeatedly stepped up on to the summit of a sand dune, and continued to watch the progress of these liberated herds. They all pointed directly for Polavina, and filed right along in swift procession, passing me continually as I walked in the same direction. When I came up to my land angle, Station C, I saw these small seals, liberated only a few hours ago at Tonkie Mees, beginning to haul anew at Polavina, from whence they had been driven overland early this morning. They were lured up as they returned, just below the rookery ground proper, on a broad sand beach by the large number of somnolent, apathetic bulls that are stretched out here in a confused medley, all quiet, however, or heavily sleeping.

From this station (C) I could easily see distinctly that last remnant of the zapooska at Stony Point, 2 miles below, creeping down into the surf, then heading toward me, join the others, all swimming up along shore just outside of the outer breaker margin of the rollers, up to that point of retarding, as I have stated above. Thus, in this way, for the first time, I have seen an unbroken circuit of released seals as it plunged back into the water and hauled out again, within the space of three hours from the time of the release until the landing was made anew.

The present poverty of these celebrated hauling grounds of Polavina is well illustrated by the catch from the drive of to-day—only 263 skins. At this day and date in 1872 I could have driven from the great parade plateau behind this breeding ground, under precisely the same circumstances surrounding the drive of to-day, 10,000 killable seals, not one of them over 4 years old, and not a single one of them under a good 3-year-old, i. e., all 8 to 12 pound skins. Comment is unnecessary.

Yesterday, from the summit of Volcanic Ridge I saw three released holluschickie sporting in the village lake, right under my feet. They seemed to be thoroughly happy; were lolling on their backs with their flippers lazily held up or turned up and over on their chests, scratching, etc. I sat down and watched them sport for some ten minutes. This morning while on my way up to Stony Point and Polavina I saw that one of them had died—its body laid just awash at the water's margin: and, only one of the other two was remaining in the lake. Now, certainly, this particular seal died last night from the strain or effect of that drive overland from Tolstoi or English Bay, in getting over here from that

point, for it was driven this far from there on the morning of the 23d instant. So, again, this question keeps rising, *How many of these driven seals that are released finally die of internal injuries received during their overland trip to the slaughtering grounds? and How many of them really live well after they have been redriven in this manner, many times from these several hauling grounds of St. Paul?* More and more forcibly arises to my mind the statement of the natives in 1834, who assured Bishop Veniaminov that the young males driven here and spared, never became fit afterwards for breeding purposes, and never, after this driving, went upon the rookeries.

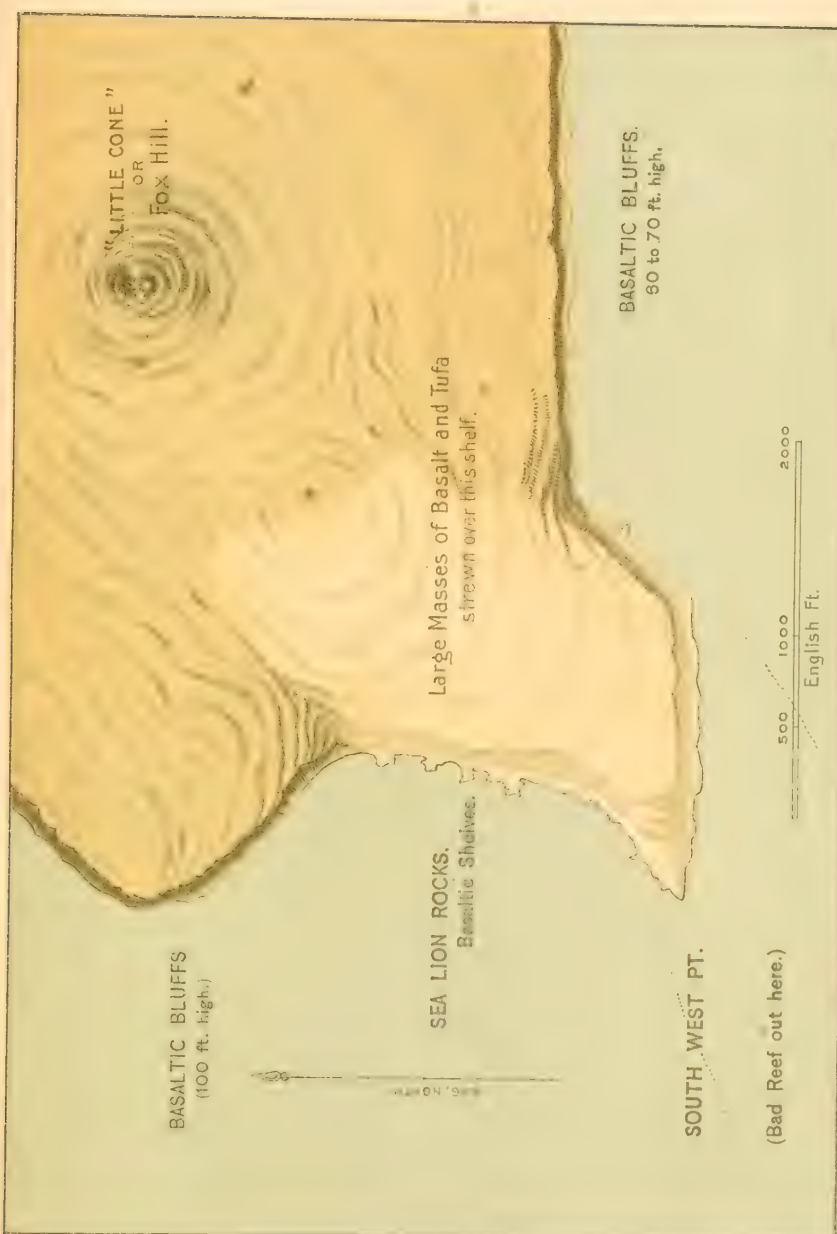
Certainly, it becomes clearer and clearer to my mind, *that those young males, which as yearlings, survive the driving here of that year of their age, and then return to survive the driving of the second year of their age; then, surviving this trial, reappear to be driven over again in their third year, to be released and again, if alive, to be redriven up here in their fourth year, and then finally, if surviving these five consecutive seasons of uncounted violent physical effort, unnatural efforts, to be again driven, as I see them to-day, in their fifth year of growth, what, indeed, can we reasonably expect of them in their sixth year! even if they do manage to endure (some of them, not many of them) all of this intense physical suffering, exhaustion, straining of tendons, congestions of lungs and brain, and heart suffusions.* The more I think over this matter the more I believe that the natives were right: and Veniaminov says that they "truly assert" it.

I had this point in my thoughts during my studies of 1872-1874; but at that time, *no holluschickie were driven from Southwest Point, from Zapadnie, from Tonkie Mecs or Stony Point, or from Polavina; no seals were driven from these places, where everybody admitted that full half of the entire number belonging to the island congregated: and, then the percentage of rejected or turned out seals on the killing grounds, was really very small. There was not much wasted energy: most of the seals driven then, were killed, and duly skinned.*

Therefore, it did not then impress me. It seemed immaterial: for, there was an immense reserve of undriven, undisturbed young male life. The natives themselves said that all was well, *even if those spared seals of 1872, never went to the rookeries.* How different at this writing. In 1879 the distant driving began here: and that marks the date of the decline of the hauling grounds. At the rate of decrease up to the present wretched order of affairs, it will now require seven years of unbroken rest on land and sea to bring back a condition such as I found and recorded here in 1872-1874. *Perfect rest must be given here on the islands, and full protection in Bering Sea.*

June 26, 1890.—Not a single holluschak or half bull on Zoltoi sands this morning, and there has not been one near it since that sweep of 500 half bulls, or yearlings, made there on the morning of the 24th instant. This time in 1872, it would have been overrunning with seals from the bay clear over to the summit of Gull Hill, even if driven clean every morning! The sealing weather here, since the 1st of June, has simply been perfect; it is as fine as could be desired; and yet, the astonishing poverty of these empty hauling grounds is sought to be ignored in certain quarters. A hundred gifted tongues, speaking in emphatic harmonious accord, could not tell the story of destruction better than those vacant sands of Zoltoi, as they appeal to your eye and understanding this morning.

I walked over to the Zapadnie killing grounds this morning, arriving



Surveyed & Drawn July 1872
by HENRY W. ELLIOTT.

HAULING GROUNDS AT SOUTH WEST POINT.
St. Paul's Isd Pribylov Grp.
SEASON OF 1872.

H. Doc. 175, 541.

No Seals have hauled out here to speak of since 1884, none whatever, landed in the Season of 1890.
The whole Area above indicated now covered with Sod and Flowers.

there about 9 o'clock. The drivers had collected a squad of about 340 holluschickie, which were clubbed thus—

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	30	12	2	7.....	53	12	4
2.....	37	13	1	8.....	47	12	1
3.....	56	11	9	9.....	18	6	5
4.....	40	15	2	Total.	344	97	30
5.....	23	9	5				
6.....	40	7	1				

or about 72 per cent unfit to take, being made up chiefly of yearlings, "short" 2-year-olds, and "wigged" 4-year-olds, and 5 year up to 7-year-old bulls. Of this latter class of half bulls, an enormous percentage in this small drive appears.

Now, this little drive was not taken from the regular hauling grounds of these holluschickie, as I knew them in 1872, but from the immediate line of the rookery on Lower Zapadnie, at a section about midway between the point and the sand beach. The weather can not be blamed for the small killing to-day; it is simply superb sealing weather, and not a word against it was uttered by the disappointed sealers this morning.

Nearly every one of these released or spared seals this morning returned at once to the rear of the breeding bulls on Lower Zapadnie, right under our eyes. They refused to return to the sea, although the path was open to them and the distance was less. They will all be driven again in the next visit, plus the new arrivals which may come along between now and then. Ah! this driving and redriving; its full significance is beginning to appeal to my understanding successfully.

That pod of holluschickie, which I have seen under Middle Hill during the last two days, still lies there, and also that one next to the clustered cows on the sand at Tolstoi. They will drive it to-morrow. Thus far no holluschickie have hauled out 50 feet above surf wash, except where they are found in back of the rookery margins, as the Reef crest, Zapadnie, and Northeast Point, where the breeding bulls drive them back some 150 to 250 feet. In English Bay, to-day, eighteen years ago, *the holluschickie were hauled by thousands upon thousands back nearly half a mile everywhere upon the soil, sand, rocks, and grass of the uplands; to-day, not a sign of a seal there except the handful down close by the surf under Middle Hill!*

June 27, 1890.—The drive to-day from Middle Hill, Tolstoi, and Bobrovia Yama (of Tolstoi near the point) panned out as follows. This is the result of saving the drive ever since the 23d instant:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	108	14	.....	17.....	53	13	3
2.....	82	13	1	18.....	40	4	.....
3.....	57	12	.....	19.....	60	15	.....
4.....	56	11	.....	20.....	49	13	2
5.....	68	12	3	21.....	63	16	3
6.....	34	3	2	22.....	45	15	.....
7.....	58	12	.....	23.....	59	15	1
8.....	60	15	2	24.....	41	14	.....
9.....	54	16	2	25.....	44	15	.....
10.....	53	13	.....	26.....	50	18	.....
11.....	73	15	.....	27.....	53	17	3
12.....	55	8	.....	28.....	42	15	.....
13.....	54	12	2	29.....	50	22	.....
14.....	61	20	.....	30.....			
15.....	81	16	.....	Total ..	1,652	394	24
16.....	49	10	.....			

Deduct 24 overcounted, leaves the whole number of animals driven, 1,628; number taken, 394, or 78 per cent rejected. Nothing taken under a 6-pound or "long" 2-year-old skin.

Thus this drive, in the very best of the season, shows that 78 per cent had to be rejected. Now, those little fellows, which were turned aside here on the 23d instant, will be out again in a few days to be redriven, plus those that are released to-day, plus all the rest to be released likewise—they will be all up in July. What will these drives be? Sixteen of the 394 skins taken in the killing grounds, as above cited, were rejected in the salt house by the company's manager because they were too small. They were normal 2-year-olds, 5½-pound skins. Perhaps, they will be glad to get them later.

In 1872-1874 very little attention was paid to driving seals until the 12th to the 14th of every June. True it was that bands of thousands of holluschickie were hauled out on the several resorts, yet because these animals were not in comparatively great numbers, and were nearly all down at that early date by the surf margin, it was deemed best to wait until the 12th to the 14th before beginning in earnest to drive; but after the 14th of June there was always such an abundant supply of holluschickie on hand within a mile and a half of this village and Northeast Point salt house, that no concern was ever given as to the number that they could get. It was just the other way; if it was a warmish, dry day, then a small drive only was made, so as to secure some 1,200 or 1,500 skins; if it was a cool, favorable day, then some 2,500 or 3,000 skins would be taken, which latter figure was the utmost number that the working force at the village could handle under the best circumstances in one day. How different this year. On the 6th of June the most eager, energetic driving began simultaneously with the arrival of each and every squad of holluschickie big enough to warrant it, and it has been kept up unremittingly until the present hour.

The spared seals turned away this morning were saved by their small size. Only 24 of the whole 1,628 in the drive were 5 and 6 year old bulls. Every "long" or well-grown 2-year-old was taken (6-pound skin) and every 3 and "smooth" 4-year-old.

Not a holluschak or any other class of fur seal on Zoltai sands this morning or noon. I watched the progress of the released seals this morning as they came out over the Lagoon slough and rookery. Most of them swam directly out to sea, not heading in any particular way except from land. A few swam under the village hill bluffs, and thence out across in the direction of the Reef, and a few headed back for English Bay. *Not one of them started for Zoltai, as they did on the 23d instant.* On that occasion it was the hauling of some 50 half bulls on Zoltai that lured, perhaps, the younger seals out after them. They were released together at the same time on the killing grounds.

This afternoon, I took another survey of Lukannon and Tolstoi, and the vacant hauling grounds of English Bay and the Volcanic Ridge. Another small pod of holluschickie at Middle Hill, from whence they drove last night for the day's killing, and another adjoining the podding cows on the sand beach at Polavina: about 250 or 300 in both pods, and chiefly yearlings.

June 28, 1890.—The superb sealing weather still continues. The natives are bringing up a small squad from the Reef as I write (5 a. m.).

The following are field notes of the podding and clubbing of drive from Reef and Zoltai bluffs, June 28, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	71	13	3	14.....	73	7	.....
2.....	75	19	.....	15.....	35	15	.....
3.....	80	14	3	16.....	49	7	.....
4.....	46	3	1	17.....	54	4	3
5.....	80	8	.....	18.....	66	9	2
6.....	62	8	1	19.....	63	10	.....
7.....	59	10	1	20.....	46	7	6
8.....	40	5	2	21.....	74	10	.....
9.....	55	8	.....	22.....	43	6	.....
10.....	45	7	4	23.....	40	8	1
11.....	56	10	.....	24.....	52	10	4
12.....	52	4	.....			
13.....	60	5	1	Total..	1,417	203	27

Whole number of animals driven, 1,417; number taken, 203, or 85 per cent turned out. Last drive from this place, June 24, 71 per cent turned out. Everything taken in this day's killing above a normal 2-year-old, and under 5-year-olds and "wigged" 4-year-olds, i. e., all 6-pound skins and upward.

June 30, 1890.—The following are field notes of the podding and clubbing of drive from Middle Hill,¹ English Bay,¹ Tolstoi,¹ Lukannon,² and Ketavie:³

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	108	11	6	13.....	56	4	.....
2.....	39	5	.....	14.....	55	15	2
3.....	41	6	4	15.....	63	15	2
4.....	69	12	4	16.....	77	10	5
5.....	53	8	1	17.....	70	9	4
6.....	40	10	1	18.....	47	12	5
7.....	53	10	1	19.....	49	9	1
8.....	47	14	4	20.....	46	10	.....
9.....	58	6	1	21.....	48	6	5
10.....	58	8	.....	22.....	81	6	.....
11.....	51	10	.....			
12.....	53	7	.....	Total..	1,262	203	50

Whole number of animals driven, 1,262; number taken, 203, or 84½ per cent rejected.

The small contingent from Lukannon and Ketavie, numbered less than 300 animals, before merged in the single drive. Everything taken that was above 5½-pound skin, and under those of the 5-year-olds and "wigged" 4-year-olds.

The significance of this day's work can be seen by the most casual observer. I counted over 24 blind-eyed or "moon-eyed" holluschickie as they escaped from the several pod "zapooskas," all of which had been crippled in this manner by prior driving this season. How many of these yearlings and "short" 2-year-olds that were released this morning will again be driven before this season ends? Nearly all of them. They pass into the sea over the Lagoon Bar; they meet squadrons of cows playing in the water around the rookery margins; they pause, lis-

¹ Last drive from these places, June 27, and 70 per cent turned out or rejected.

² Last drive from this place, June 20.

³ First drive from this place.

ten, join in the general comfort which the water certainly affords them, and as these females and the fresh animals of their own kind haul out on land they join again and fall into this deadly procession to the land from whence they were driven early this morning. How the significance of this driving now keeps rising to my mind! I had little occasion in 1872-1874 to give it thought, and what I did was only in a suggestive mood.

I passed up from the killing grounds over to Tolstoi rookery and gave the drivers' path or seal road a careful review. A few holluschickie were again hauled out under Middle Hill and a dozen perhaps on the Tolstoi rookery sand intersection; but the great hauling grounds of English Bay are utterly destitute of seal life at the hour of this writing and have been so, with the marked exception of that small spot under Middle Hill and the juxtaposition of Tolstoi rookery, which are the only points where the seals now haul in all that vast extent of ground pattered over by them here in 1872-1874.

Not any holluschickie on Zoltoi sands to-day, and only one or two on the rocks beyond and above, from whence they have been driven thus far, as Zoltoi seals. Mr. Goff assures me that there was no driving from the sands here last year; it was all from these rocks above. When this famous hauling ground began to fail was the time for the note of warning to have been sounded. When did it fail?

July 1, 1890.—The following are field notes of the podding and clubbing of drive made from every section of the reef, everything in back of Zoltoi Bluffs, Garbotch, and the entire circuit of the reef.

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	109	15	2	18.....	49	6	3
2.....	51	4	1	19.....	78	4	4
3.....	77	12	1	20.....	58	9	5
4.....	53	9	.....	21.....	60	6	4
5.....	54	7	.....	22.....	78	11	4
6.....	69	4	.....	23.....	67	7	4
7.....	58	10	.....	24.....	56	7	.....
8.....	61	4	.....	25.....	60	4	1
9.....	48	9	.....	26.....	91	7	4
10.....	73	12	1	27.....	57	11	3
11.....	100	8	3	28.....	71	8	4
12.....	58	8	2	29.....	69	7	1
13.....	48	9	4	30.....	38	6	.....
14.....	52	7	3	31.....	75	9	.....
15.....	46	8	3	Total ..	1,998	245	66
16.....	68	10	6				
17.....	66	7	3				

Whole number of animals driven, 1,998; number taken, 245, or 89 per cent rejected. Last drive from this place, June 28, when 85 per cent were rejected. Everything taken over a 5-pound skin and under the "wigged" 4 and 5 year old pelts. Ninety per cent of the seals rejected to-day were yearlings.

This is the largest number yet driven in any one drive from this place thus far this season, and the catch among the smallest. The yearlings driven before, plus the new arrivals, are making the ratio.

Not a seal on the hauling grounds and sands of Lukannon Bay, and none on Ketavie; about 500 yearlings at Middle Hill, and none of that pod near the sand beach at Tolstoi rookery that I saw yesterday afternoon. They have evidently made for Middle Hill.

July 2, 1890.—The following are field notes of the podding and clubbing of a drive made from every section of Polavina and Stony Point:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	83	7	-----	16.....	55	5	2
2.....	91	11	-----	17.....	104	8	2
3.....	101	6	4	18.....	113	12	5
4.....	59	4	-----	19.....	73	15	-----
5.....	50	6	-----	20.....	62	11	3
6.....	56	6	2	21.....	91	13	5
7.....	63	5	3	22.....	63	8	7
8.....	65	10	-----	23.....	49	6	2
9.....	102	4	-----	24.....	47	9	7
10.....	90	6	5	25.....	40	6	5
11.....	100	12	7	26.....	43	11	4
12.....	71	13	2	27.....	51	9	6
13.....	72	14	3				
14.....	65	8	2	Total ..	1,929	230	80
15.....	60	5	3				

Whole number of animals driven, 1,929; number taken, 230, or 88½ per cent rejected. There were also 10 "road" and "smothered" skins, which made a total of 240 taken. Last drive from this place, June 25, when 800 animals were driven and 263 taken, or 65 per cent rejected.

This drive to-day covers a whole week's interval since the last drive from Polavina, and it shows that as the season advances, *the numbers driven rapidly increase, while the proportionate catch diminishes.* In other words, the new arrivals, plus those redriven, will continue to steadily swell the gross aggregate driven day by day from now on, and not proportionately increase the catch. Rather, I believe that the catch will markedly diminish.

To-day, every good 2-year-old, every 3 and every "smooth" 4 year old was knocked down out of this 1,929 animals: every one! Where, at this rate of killing, is the new blood left for the rookeries now so desperately needed there? Hardly a young bull left, between the effects of driving and the deadly club, save a few hundred of those demoralized and worthless half bulls, which I make note of as they come up in every drive; and these, the natives truly declare, will never go upon the rookeries.

Thus far, this season, every seal that is eligible in weight, from a "long" 2-year-old male up to 5-year-olds, has been ruthlessly slain within a few days after its appearance on these desolate hauling grounds of St. Paul Island. They were as ruthlessly knocked down last year; and to-day, the yearlings and everything above to 5-year-olds, *would be knocked down, did not the new \$10.22 tax per skin save their lives!* The new deal, in this respect, was lucky for the seals.

My assistant, Palmer, came in from Northeast Point this afternoon. He tallied a killing there, yesterday, as follows: Counting the seals one by one as they shamle out from the pod when released, and then the ones knocked down, adding the two counts gives the whole number in the pod.

The following are field notes of the podding and clubbing of a drive made at Northeast Point (Fowler's party), July 1, 1890, taking nothing under a 6-pound skin, or "long" 2-year-olds.¹

Pod.	Number driven.	Number taken.	Pod.	Number driven.	Number taken.
1.....	62	8	15.....	36	10
2.....	53	1	16.....	35	6
3.....	56	4	17.....	28	1
4.....	35	1	18.....	42	4
5.....	44	6	19.....	29	6
6.....	62	4	20.....	39	5
7.....	46	6	21.....	30	2
8.....	52	7	22.....	38	5
9.....	47	8	23.....	31	3
10.....	42	3	24.....	26	5
11.....	66	3	25.....	22	4
12.....	58	9	Total..	1,103	120
13.....	62	5			
14.....	59	4			

Whole number of animals driven, 1,103; number taken, 120, or 91½ per cent rejected.

July 3, 1890.—The following are field notes of the podding and clubbing of a drive made from every section of Upper and Lower Zapadnië, July 3, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	99	16	5	9.....	63	17	9
2.....	70	11	2	10.....	70	8	8
3.....	71	10	3	11.....	62	17	5
4.....	63	9	-----	12.....	46	13	-----
5.....	50	16	5	13.....	71	12	5
6.....	78	18	4	14.....	62	18	4
7.....	61	6	8	Total..	925	180	64
8.....	59	11	6				

Whole number of animals driven, 925; number taken, 180, or 81 per cent rejected. Nothing under a 6-pound skin taken, or "long" 2-year-olds. Last drive from this place, June 26, 1890, when 344 animals were driven and 97 taken, or 72 per cent rejected.

These drives at Zapadnië are made just as they are at all the other rookeries this season—made from the immediate outskirts of the breeding animals, cows, pups, and bulls. This method of driving was not even suggested, much less done, in 1872–1874. *Such a proceeding would have been voted abominable then; it is still more so now—it sweeps every young male seal that is 1, 3, and 2 years old into death as soon as it hauls on these shores to-day.* Nothing escapes except that which maturing age or extreme youth saves, or rather which the high tax of 1890 (\$10.22) saves.

The only spot on this island where seals have hauled outside of their close and immediate juxtaposition with the breeding classes, is on Middle Hill sand beach, at a point on the English Bay sea margin about halfway between Neahrpahskie Kammen and Tolstoi rookery.

I can not summon language adequate to express my condemnation of the present method of driving. Careful as it is, it is a method made necessary by the amazing scarcity of young male seals. *Under any and all circumstances there should be a stated and positive reservation of half the hauling grounds on these islands as a place of undisturbed rest and*

¹ Half bulls not tallied.

refuge for these young male seals and yearlings—places where material can and would grow up in full vigor to supply the imperative demands of nature on these breeding grounds. These reserves would, in fact, be reservoirs that would be a steady source from which this stream of particular seal life can regularly flow, without diminution in its volume, from year to year.

This method of driving in 1890, huddles and hustles the breeding lines, and sweeps the few surplus bulls that may be outside, up and away to the killing grounds—stampeded into the drive.

July 4, 1890.—To-day, finding that the supply of 3 and 4 year olds and “long” 2-year-olds was practically exhausted—in other words, that more and more seals were being driven up every day, and less and less skins taken—the company’s agent dropped his standard to 5½-pound skins. This takes in all the average 2-year-olds, which have hitherto been rejected as they appeared in the pods. But even this tumble to a lower grade did not prevent a small catch, as the following tabulation of the biggest drive of the season as to numbers testifies.

The following are field notes of the podding and clubbing of drive made from English Bay, Middle Hill, and Tolstoi, July 4, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	84	4	.....	33.....	45	6	.....
2.....	81	6	1	34.....	47	8	.....
3.....	90	3	2	35.....	61	10	.....
4.....	94	8	.....	36.....	61	4	.....
5.....	65	8	.....	37.....	52	.....	1
6.....	75	8	1	38.....	36	3	.....
7.....	52	5	3	39.....	40	6	2
8.....	61	7	3	40.....	49	5	6
9.....	76	8	3	41.....	52	6	.....
10.....	70	11	4	42.....	67	5	1
11.....	126	14	1	43.....	64	4	4
12.....	82	15	1	44.....	58	3	1
13.....	71	13	1	45.....	59	9	.....
14.....	81	11	.....	46.....	68	10	1
15.....	92	10	3	47.....	58	8	.....
16.....	63	9	.....	48.....	56	2	.....
17.....	76	11	3	49.....	70	6	.....
18.....	69	7	.....	50.....	45	2	.....
19.....	68	9	1	51.....	58	4	.....
20.....	58	7	1	52.....	64	8	.....
21.....	74	9	2	53.....	38	3	.....
22.....	56	6	3	54.....	36	2	.....
23.....	53	4	2	55.....	66	8	.....
24.....	92	10	4	56.....	62	8	.....
26.....	72	7	3	57.....	53	5	.....
25.....	46	10	1	58.....	53	5	.....
27.....	70	4	.....	59.....	56	14	.....
28.....	85	10	1	60.....	40	8	.....
29.....	77	12	.....	61.....	41	7	.....
30.....	69	4	.....	62.....	42	5	.....
31.....	97	8	.....			
32.....	111	12	1	Total ..	4,323	432	67

Whole number of animals driven, 4,323; number taken, 432, or 90½ per cent rejected. Last drive from this place, June 30, when 1,262 animals were driven and 203 taken, or 84½ per cent rejected.

July 5, 1890.—Visited Otter Island. No seals whatever hauled out there save a small squad of 50 right on the rocks awash, above our landing; has been none thus far this season, or no sign of them. Last year some 1,500 or 2,000 were hauled out here at this date. Grass has thickly and solidly grown over the hauling grounds, clear down to the surf, all over those places which were polished bare of every trace of vegetation by the hauling seals in 1872-1874.

July 7, 1890.—The following are field notes of the podding and club-

bing of a drive made from English Bay, Middle Hill, Tolstoi, Lukannon, and Ketavie:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	70	7	1	31.....	74	8	.....
2.....	52	11	.....	32.....	59	4	.....
3.....	41	7	1	33.....	73	5	.....
4.....	79	9	6	34.....	62	10	.....
5.....	77	17	1	35.....	79	15	.....
6.....	66	8	1	36.....	74	8	.....
7.....	60	10	1	37.....	56	5	1
8.....	48	7	2	38.....	70	4	1
9.....	70	11	3	39.....	77	5	2
10.....	38	4	.....	40.....	43	9	.....
11.....	89	9	2	41.....	59	7	.....
12.....	101	4	.....	42.....	59	5	.....
13.....	64	2	.....	43.....	41	2	.....
14.....	42	2	.....	44.....	56	.....	.....
15.....	121	12	.....	45.....	84	15	.....
16.....	102	5	3	46.....	50	5	.....
17.....	76	6	.....	47.....	60	3	.....
18.....	70	5	.....	48.....	38	5	.....
19.....	78	8	.....	49.....	53	6	2
20.....	86	11	.....	50.....	45	6	.....
21.....	70	4	2	51.....	43	4	.....
22.....	82	2	.....	52.....	45	8	.....
23.....	72	5	.....	53.....	40	4	.....
24.....	75	3	.....	54.....	47	3	.....
25.....	62	5	3	55.....	70	1	.....
26.....	100	7	3	56.....	42	2	.....
27.....	61	7	3	57.....	66	7	.....
28.....	59	4	.....			
29.....	110	5	.....	Total..	4,001	350	42
30.....	65	7	3				

Whole number of animals driven, 4,001; number taken, 350, or 92 per cent turned out. Last drive from this place, July 4, when 4,323 animals were driven and 432 taken, or 90½ per cent turned out. To-day every 2-year-old down to middle or medium, or every 5½-pound skin, was taken. Had the standard been kept at original mark the rejection would have been as high as 95 to 96 per cent!

July 8, 1890.—Yesterday afternoon I went back to Tolstoi over the seal road on which the drive above tallied was made in the night and morning of the 7th instant. The number of road "faints" or skins was not large, which shows that the natives had taken great care in driving. This they have uniformly done thus far: but, when they pick up the drives at Zapadnië, at Lukannon, on the Reef, and at Polavina, they are obliged, in order to get all of the holluschickie, to sweep the very skirts of the rookeries. That is wrong; it should not be permitted. When matters become so desperate as to obligate such a method it is time to call a halt.

I went up to Stony Point this morning early, and made the following field notes of the podding and clubbing of a drive from Polavina and all the beach below to Stony Point:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	96	9	.....	15.....	63	16	2
2.....	62	5	.....	16.....	61	4	3
3.....	60	5	1	17.....	64	12	8
4.....	87	9	1	18.....	56	7	10
5.....	65	6	.....	19.....	69	9	4
6.....	86	5	.....	20.....	72	14	4
7.....	73	13	.....	21.....	62	9	5
8.....	62	9	.....	22.....	91	20	6
9.....	86	9	2	23.....	78	19	7
10.....	108	7	2	24.....	59	8	9
11.....	80	8	4	25.....	61	11	3
12.....	75	7	2	26.....	43	7	.....
13.....	98	14	4				
14.....	58	13	8	Total..	1,865	255	85





A drawing from nature by the author.

HOLLUSCHICKIE HAULING ON LUKANNON SANDS, SAINT PAUL ISLAND, JULY 10, 1872.

Scarcely one of these seals seen out here in 1890.

Whole number of animals driven, 1,865; number taken, 255, *or 87 per cent turned out*. Last drive for this place, July 2, when 1,929 animals were driven and 210 taken, *or 88 per cent turned out*, but the standard to-day being lowered to 5½-pound skins prevents the increase of rejection percentage. Had the same standard prevailed to-day as on July 2, the rejection would have been as high as 92 per cent!

This drive was principally made from the sand beach under Polavina rookery, and on its outskirts to the north; and that is where these 85 half bulls (really, *nearly all of them were 7 and 10 years old*) were gathered in. The two prior drives were chiefly made from the parade ground up above the breeding ground, and there these bulls were first gathered in. *To-day every 2-year-old was taken that was well grown*, and had not these smaller seals been taken there would not have been over 120 or 150 skins at the most. The first citation, 120, is the nearest correct; this would have given us a rejection of over 93 per cent.

I came down to the village on the sand beach between Stony Point and Lukannon. Not a killable seal has hauled there yet this year, a place where thousands upon tens of thousands of them were to be seen at this time in 1872. Not a holluschak has as yet hauled upon Zoltai sands. That was one of the finest resorts for holluschickie that the island boasted of in 1872-1874.

July 9, 1890.—I went over to Zapadni early (4 o'clock) this morning to witness the driving there by the natives. Most of the scanty drive was taken on the immediate borders of Upper Zapadni rookery. The whole sweep of Lower Zapadni did not yield over 150 or 200 holluschickie, which had hauled out at several places just up and above the breeding seals.

All that large space above the rookery on Lower Zapadni, which was literally alive with trooping platoons of holluschickie in 1872, *is to-day, entirely vacant, not a seal on it*: and the natives peering down over the high bluffs on the south side and to the westward of the point trying to find a few seals skulking down there on the rocks awash. Their eager search in such a quarter, with their backs to this silent parade ground of 1872, made me decidedly thoughtful. They said that they would go with a "bidarah" and pick these secluded seals up. They did so last year, they averred. I made the following field notes of the podding and clubbing of a drive made from Upper and Lower Zapadni, July 9, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	125	11	-----	10.....	37	6	2
2.....	67	19	2	11.....	47	8	4
3.....	48	9	3	12.....	52	9	1
4.....	54	12	4	13.....	43	15	2
5.....	55	9	4	14.....	34	9	3
6.....	56	17	5	15.....	59	6	-----
7.....	44	7	5	16.....	45	9	2
8.....	47	11	2				
9.....	54	13	3	Total..	867	172	42

Whole number of animals driven, 867; number taken, 172, *or 83 per cent rejected*. Last drive from this place July 3, when 925 animals were driven, and 180 taken, *or 81 per cent turned out*. Lowering the standard on the 4th instant prevented an immense percentage of rejection here to-day. Had it not been for the small 5½-pound skins taken, *there would have been 95 per cent rejection!*

July 10, 1890.—The following are field notes of the podding and clubbing of a drive made from every section of the Reef and Garbotch, July 10, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	86	5	.....	26.....	56	10	.....
2.....	67	8	.....	27.....	57	1	.....
3.....	62	8	.....	28.....	52	8	.....
4.....	74	7	.....	29.....	106	1	.....
5.....	35	9	.....	30.....	101	14	.....
6.....	76	14	.....	31.....	70	7	1
7.....	47	8	.....	32.....	65	7	2
8.....	54	7	.....	33.....	86	7	1
9.....	87	11	.....	34.....	68	6	2
10.....	80	5	.....	35.....	68	19	1
11.....	74	13	2	36.....	59	10	1
12.....	56	9	1	37.....	60	10	1
13.....	48	4	2	38.....	70	7	2
14.....	94	4	.....	39.....	81	7	1
15.....	76	6	1	40.....	74	3	1
16.....	52	4	.....	41.....	59	15	.....
17.....	73	10	3	42.....	64	15	.....
18.....	74	9	3	43.....	78	6	.....
19.....	70	15	2	44.....	62	5	.....
20.....	61	12	.....	45.....	77	3	5
21.....	104	5	.....	46.....	37	7	.....
22.....	62	9	.....	47.....	52	3	.....
23.....	58	10	.....	48.....	41	7	.....
24.....	69	6	.....			
25.....	66	3	.....	Total..	3,246	377	31

Whole number of animals driven, 3,246; number taken, 377, or 89 per cent rejected.

The last drive from this place and killing was made on the 5th instant, and was not tallied by myself. I was over to examine Otter Island while the killing was in progress. Five hundred and twenty-six skins were taken, however, with the standard lowered to 5½-pound skins, and as I looked at the drove in waiting on the killing grounds that morning I estimated that there were at least 4,000 animals in it.

On the 1st of July a drive of some 2,000 animals was made from this place, and with the higher standard, the original standard, 245 skins were taken. That standard applied to-day would have cut the catch of 377 down to less than 200; more likely to 150. As the clubbing progresses now, every 2-year-old holluschak, from average size up, is taken to the 5-year-olds and "wigged" 4-year-olds. The "short" 2-year-olds and the yearlings escape. The standard used on the 11th of June, by which nothing under a good 3-year-old skin was taken, if followed to-day, through the podding and clubbing of the 3,246 driven seals above itemized, would not have given the lessees more than 80 skins!

July 12, 1890.—The following are field notes of the podding and clubbing of a drive made from English Bay, Middle Hill, Tolstoi, Lukannon, and Ketavie, July 12, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	98	7	.....	39.....	68	9	.....
2.....	65	.....	.....	40.....	50	11	1
3.....	78	8	2	42.....	54	6	.....
4.....	64	5	.....	42.....	76	4	.....
5.....	52	8	.....	43.....	65	6	.....
6.....	64	2	2	44.....	37	6	.....
7.....	63	6	1	45.....	64	13	.....
8.....	73	10	4	46.....	87	14	.....
9.....	59	9	.....	47.....	77	18	.....
10.....	78	10	.....	48.....	76	16	.....
11.....	63	2	.....	49.....	71	8	.....
12.....	69	9	.....	50.....	71	11	.....
13.....	51	6	1	51.....	91	11	.....
14.....	46	7	.....	52.....	88	13	.....
15.....	62	9	.....	53.....	89	13	.....
16.....	49	6	.....	54.....	86	5	.....
17.....	58	6	2	55.....	89	9	2
18.....	63	6	3	56.....	100	10	1
19.....	59	9	1	57.....	92	13	.....
20.....	77	10	2	58.....	72	8	.....
21.....	40	7	.....	59.....	87	10	.....
22.....	49	10	1	60.....	76	7	.....
23.....	50	13	.....	61.....	93	10	1
24.....	52	8	.....	62.....	114	16	2
25.....	26	2	.....	63.....	48	6	2
26.....	53	10	.....	64.....	81	6	.....
27.....	67	9	.....	65.....	71	15	.....
28.....	50	16	.....	66.....	79	10	.....
29.....	51	5	.....	67.....	69	10	.....
30.....	65	8	.....	68.....	91	12	.....
31.....	60	4	1	69.....	60	6	.....
32.....	61	4	.....	70.....	66	12	.....
33.....	44	3	.....	71.....	60	13	3
34.....	56	8	1	72.....	47	4	2
35.....	79	5	5	73.....	55	5	3
36.....	26	1	1	74.....	101	13	.....
37.....	58	6	2				
38.....	58	11	2	Total.....	5,150	633	48

Whole number of animals driven, 5,150; number taken, 633, or 89½ per cent turned out. Last drive, July 7, from this place, when 4,001 animals were driven, and 350 taken, or 92 per cent turned out.

This is the second drive from these places, ranking largest in number, but it has rested since July 7, or five days, a day longer than has been given yet to it this season; and then the natives purposely left a squad of at least 300 yearlings in the lakes at the head of the lagoon and another squad of at least 250, under the Lukannon sand dunes.

When it is borne in mind that in the very height of the season, after five days' rest or nonattention, only 633 medium fur-seal skins, mostly 5½-pound clean skins or 2-year-olds, can be secured from the combined scraping of everything in English Bay (on Zapadni and Southwest Point we know there is nothing), Middle Hill, Tolstoi, Lukannon, and Ketavie, the extraordinary condition of these interests can be well understood in a general way. *Such a driving in 1872 at this time and circumstances of weather would have brought at least 50,000 holluschickie up here, instead of the 5,150 to-day!* There were a number of cows in this drive; I counted three that I was sure of.

Sunday, July, 13, 1890.—Walked up to Northeast Point early this morning for the purpose of plotting the area and position of the breeding seals on the Polavina and Novastoshnah; also to see the natives drive at Polavina. I was on the ground at 5 a. m. and saw the whole *modus operandi*. The holluschickie haul up close against the sand

beach "drop" of Big Polavina rookery, and the drivers, in getting the young males, swept four cows into the drove, and their little black pups were left behind them on the sand, bruised and marked by the stampeding flippers of the herd. To get the holluschickie, they are obliged to drive in this violent manner.

Another squad of, say, 1,000, mostly young or "short" 2-year-olds and yearlings, was swept up on the parade plateau, and another squad was driven from Little Polavina parade, the first drive that has been made from there thus far this season. No seals in this division but small ones. I have charted these areas of hauling.

Along the entire spread of Lukannon, Polavina, and Northeast Point sand beach, 8 miles nearly, *I did not see a single young seal—not one hauled out*; only a dozen or two old worthless bulls scattered here and there over this extent at wide intervals. *At this time in 1872 such a walk as mine this morning would have brought me in contact with and in sight of from 50,000 to 100,000 holluschickie!* The weather, too, is simply superb sealing weather—all day yesterday, last night, and this morning.

About 300 yards north of that basaltic shoulder which terminates the sand beach above Little Polavina rookery, and fully a mile from it, I saw on the sand beach this morning, a single cow guarded by two old bulls. This is the first example of solitary hauling of a female (it was an old cow) that I have ever witnessed. It is a straw, however, showing the way the wind is blowing up here this season—points to the demoralization which the present order of affairs is working, and which has been pretty steadily at work ever since 1882.

Found Fowler busy on the killing grounds just across the lake from Webster's house, where I arrived at 7.30 a. m. Mr. Goff joined me soon after, and we at once take up the rookery survey.

Fowler this morning had over 5,000 seals in his drive, but took only 473 of them. In the afternoon, the rain coming up, he made a rapid drive of those holluschickie which he had been saving for to-morrow, fearing that the rain would send them to the sea, and thereby secured 168 more, making a total of 641, being the highest limit reached in any one day's killing up here this year. On this day last year, Webster killed 1,883 and the next day 1,156; but, Fowler will have no holluschickie to kill to-morrow.

The driving up here has radically changed since 1872. Then Webster got all the killable seals he wanted from that sand beach on the neck between the foot of Cross Hill on the north shore and the Big Lake sand dunes. He never went out along the outskirts of the rookery; it was not even thought of.

The hauling now at Novastoshnah takes place at seven intervals or breaks in the breeding belt, and right in the rear and fairly among the scattered harems in many instances. We saw the scraping tracks of the drive which had been made in the early hours of this morning. We found 15 or 20 pups which had been swept away by the drive, out into the rear, killed or dying by the stampede incident to such driving, just as I witnessed it at Polavina this morning, on my way up.

The parade fields of this once magnificent breeding ground are positively vacant to-day; grass and white close-bunched flowers are growing and springing up everywhere all over them, while large areas of the well-polished ground of 1872-1874 are sodded over. The holluschickie as they hauled to-day did not occupy a space of ground 500 by 50 feet in depth over the entire extent of this immense habitat of theirs: and the drive of 5,000, which we saw on the killing grounds, had been





NORTH HILL

BOGA SLOV.

THE NORTH SHORE OF SAINT PAUL ISLAND, JULY 13, 1890.

View from Sand Dunes, north of and right under Cross Hill, showing the long expanse of abandoned hauling grounds on the sands of the north shore, upon which Webster got his catches of 1872-1874, exclusively; no seals out there in 1890, save the small squad indicated.

A drawing from nature by the author.

scraped from seven different points between the base of Hutchinson Hill and the southeast extremity of the rookery.

On the northwest shoulder a small pod of say 400 holluschickie were lying in just back of the narrow strip of rookery there, about 250 feet back from the sea. A little way over, across to the south, was another small pod of less than 300, near the small sand beach between the middle and the northwest shoulders. Then another small pod appeared just below the south shoulder, lying above surf wash on the sand, and another small squad lay out on that once famous reach of sand beach under Cross Hill and the Big Lake sand dunes. All told, there could not have been over 3,500 of them. These, plus the 5,000 which Fowler had in hand, gives us all there is on this great rookery to-day—8,500 holluschickie; 95 per cent of them yearlings!

This hauling in under the cover of the breeding seals by the non-breeding young males, as we see it to-day, recalls forcibly the account which the natives gave to Lieutenant Maynard and myself about the holluschickie as they hauled in in 1835 and several years thereafter. They then "lay in among the breeding seals."

In 1872, instead of these frequent breaks that now appear in the circuit of this rookery belt here, only one place then existed from Sea Lion Neck clear around to the end of the southwest shoulder. The holluschickie were then literally obliged to haul out over that sand beach opening in Sea Lion Bight, where there was an open reach of several hundred feet of sea margin, which was avoided by the breeding seals on account of the sand. To-day, there are twenty-five or thirty vacant spaces in the breeding belt of the Novastoshuah, all open for the holluschickie.

July 14, 1890.—The following are field notes of the podding and clubbing of a drive made from every section of the Reef peninsula, *July 14, 1890:*

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	117	4	3	13.....	69	4	-----
2.....	51	4	-----	14.....	69	3	-----
3.....	80	1	-----	15.....	63	9	-----
4.....	73	5	-----	16.....	60	7	-----
5.....	68	7	-----	17.....	61	6	-----
6.....	77	11	-----	18.....	47	3	-----
7.....	69	11	2	19.....	61	2	1
8.....	70	5	2	20.....	38	4	-----
9.....	69	4	1	21.....	74	2	-----
10.....	73	2	1				
11.....	82	4	-----	Total ..	1,592	101	10
12.....	71	3	-----				

Whole number of animals driven, 1,592; number taken, 101, or 93 per cent rejected. Last drive, July 10, when 3,246 animals were driven and 377 taken, or 89 per cent rejected. This drive shows the elimination of the 2-year-olds, which were first taken here on the 5th instant—now, nearly all yearlings!

July 15, 1890.—The following are field notes of the podding and clubbing of a drive made from English Bay, Middle Hill, Tolstoi, Lukanon, and Ketavie, July 15, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	82	5	4	31.....	104	8	2
2.....	90	7	9	32.....	102	8	.....
3.....	89	4	.....	33.....	76	10	.....
4.....	77	3	1	34.....	85	6	1
5.....	69	6	1	35.....	88	5	2
6.....	80	3	.....	36.....	77	5	3
7.....	66	1	.....	37.....	102	5	1
8.....	77	2	.....	38.....	84	4	.....
9.....	83	8	.....	39.....	74	8	1
10.....	70	2	.....	40.....	76	6	1
11.....	79	6	.....	41.....	120	11	.....
12.....	76	2	.....	42.....	91	6	.....
13.....	57	3	.....	43.....	76	8	.....
14.....	55	3	.....	44.....	84	7	1
15.....	84	5	.....	45.....	78	7	.....
16.....	80	4	.....	46.....	81	.....	.....
17.....	66	4	.....	47.....	80	3	.....
18.....	80	1	.....	48.....	84	5	.....
19.....	78	5	.....	49.....	119	7	.....
20.....	79	4	2	50.....	94	7	.....
21.....	68	4	2	51.....	83	7	.....
22.....	89	3	.....	52.....	65	3	.....
23.....	53	2	.....	53.....	68	8	3
24.....	98	5	.....	54.....	91	6	.....
25.....	90	8	4	55.....	90	7	.....
26.....	76	4	2	56.....	85	6	.....
27.....	80	9	.....	57.....	89	13	.....
28.....	109	5	1	Total..	4,644	309	47
29.....	93	6	5				
30.....	117	8	1				

Whole number of animals driven, 4,644; number taken, 309, or 93 per cent rejected. Last drive from these places, July 12, when 5,150 animals were driven and 633 taken, or 89 per cent rejected. Nearly all yearlings in this drive—the dregs are now being drawn upon!

In this drive, I do not think there were 60 skins taken that were 3-year-olds, or 7-pound skins, and certainly not 20 4-year-olds. Of course every one of them was instantly clubbed, as they have regularly been the moment they appeared in the pods since the season opened. No 2-year-old of normal growth escaped to-day; only the yearlings, the "runty" or "short" 2-year-olds and few half bulls, which I have numbered. These half bulls in all my tallies are those that run all the way up from 5-year-olds to advanced age, 10 or 15 years.

The evidence of redriving was stronger than ever to-day; the number of "moon-eyes" being so large that every pod exhibited one or more examples. Fully half of the animals in this drive have been up here over and over again this season. In my opinion, as I have been watching the course of these released seals, I believe that some go back at once on the day of their release to the hauling grounds. Not all return to the same place from whence driven that day, but haul out on other grounds here, there, and anywhere else on the island. They are then soon again picked up in the rapid rotation of driving, and put through this painful land journey again and again in this manner. The others go out to sea in quest of food, and perhaps are gone a week, to return and land as above cited, and then be again driven and redriven. Thus it becomes an exceedingly difficult matter or problem to solve, i. e., the query of how many of these seals that appear in this drive to-day, 4,644, are up here for the first time? How many of them have hitherto been driven from the seven or ten different hauling spots on this island this season? And how often have they been thus redriven?

Ever since the 10th and 12th instant the yearlings, i. e., last year's pups, have been hauling in greatly increased numbers daily, and will do so until the 20th instant. This was their habit in 1872-1874, and I notice by these tallies on the ground that it is their habit to-day. Of course the \$10.22 tax paid this year rules them out safely from the club, otherwise they would have been slaughtered. This shift from the \$3.17 tax of 1870, to the \$10.22 tax of 1890, is an exceedingly fortunate one for the seals, and the Government. It has prevented what would have been close to the finishing touch relative to the destruction of these rookeries; yes, perhaps such a killing which would have made it the labor of fifteen years to restore them and the hauling grounds dependent, to their standard of 1872. As it now appears, it will require at least seven years of absolute rest, killing nothing here during that time save that small numbers of pups and yearlings required annually for the food and clothing of the natives of the Pribilof Islands. Had there been no killing at all this year, it even then would have required a rest of at least five years, beginning with this season. The work of last year, and this, was and is literally "robbing the cradle and the grave."

July 17, 1890.—The following are field notes of the podding and clubbing of a drive made from Polavina July 17, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Four-year wigs.	Pod.	Number driven.	Number taken.	Half bulls.	Four-year wigs.
1.....	96	9	6	-----	10.....	158	18	20	8
2.....	84	15	6	9	11.....	76	6	14	4
3.....	81	11	5	-----	12.....	73	15	26	7
4.....	124	9	6	-----	13.....	61	18	17	8
5.....	134	9	13	10	14.....	70	3	-----	1
6.....	101	7	8	7	15.....	41	5	7	1
7.....	114	16	10	6	16.....	67	7	9	3
8.....	124	14	14	12					
9.....	130	10	17	5	Total..	1,514	172	168	81

Whole number of animals driven, 1,514; number taken, 172, or 87 per cent turned out.

Of the 172 taken as above, 81 were 4-year-old "wigs." This is the first killing of this low-grade skin made thus far this season; they have been driven up steadily and redriven, and as steadily rejected. *Had they not been taken to-day the percentage of rejection would have been 95!*

The following are field notes of the podding and clubbing of a drive made from Lukannon and Ketavie July 17, 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Pod.	Number driven.	Number taken.	Half bulls.
1.....	150	18	6	10.....	70	12	11
2.....	137	26	3	11.....	66	11	10
3.....	91	14	5	12.....	72	12	7
4.....	62	12	5	13.....	65	5	2
5.....	80	18	7	14.....	67	5	7
6.....	73	12	6	15.....	63	7	1
7.....	83	14	3	16.....	74	10	-----
8.....	80	12	4				
9.....	80	9	5	Total..	1,320	197	83

Whole number of animals driven, 1,320; number taken, 197, or 85½ per cent rejected.

A small squad of 3 and 4 year olds hitherto undriven, though marked on Ketavie during the last three days, some 80 or 90 all told, were

secured in this day's drive, being brought right up through the scattered breeding animals from the point of Ketavie. This raises the catch proportionately in the little drive. The Lukannon seals were nearly all yearlings, and only 7 "wigged" 4-year-olds were knocked down in this batch; at least 25 or 30 of them were released.

Thus these two small drives for this day show an irregularity in their percentage, both being due to exceptional incidents. The Polavina catch of 172 would not have touched 100 skins had it not been for the sudden drop to "wigged" 4-year-old bulls, 81 of which were knocked down. It is the very first systematic killing of this class made thus far this season. It is, however, a small matter—drive, catch, and all.

The Ketavie drive was principally made from the extreme point, a new spot which has not been driven from before, but the rookery is now so thin and straggling that the drivers were able to get fairly down onto the point and dislodge about 100 good 3 and 4 year olds. The balance of the 197 skins taken in this united drive with Lukannon are small $5\frac{1}{2}$ to 6 pound skins.

Going up to Polavina early this morning, I did not see a single young male seal on that long reach of sand beach between Lukannon and Polavina; only weak, sickly, or dying seecatchie, a dozen or two of them, and nothing else. The utter absence of the holluschickie from these sands of Lukannon beach and those extensive hauling grounds back of them on the Volcanic ridge and half a mile again to the northward—this desolation is fully as startling a contrast with their life and animation in 1872 as is that of Zoltai sands and English Bay.

July 18, 1890.—The following are field notes of the podding and clubbing of a drive made from Zapadnië, the last drive here for 1890:

Pod.	Number driven.	Number taken.	Half bulls.	Four-year wigs.	Pod.	Number driven.	Number taken.	Half bulls.	Four-year wigs.
1.....	94	13	5	0	11.....	89	15	4	6
2.....	50	11	11	3	12.....	51	12	9	3
3.....	76	17	9	5	13.....	61	20	9	7
4.....	78	15	5	4	14.....	63	15	6	6
5.....	82	12	2	3	15.....	72	23	7	8
6.....	85	15	-----	3	16.....	46	11	16	5
7.....	81	12	5	-----	17.....	69	16	9	5
8.....	71	11	8	4					
9.....	72	8	8	1	Total ..	1, 192	241	115	74
10.....	72	15	2	5					

Whole number animals driven 1,192; number taken, 241, or 79 per cent rejected. Minus the "wigged" 4-year-olds, 88 per cent turned out.

This tally of the final killing of the season at the Southwest Bay killing ground of Zapadnië shows that extraordinary scarcity of holluschickie in a most lucid manner when contrasted with the other drives of this year, which I have tallied on this once-famous rendezvous. This last scrape made here to-day was opened by the appearance of only 1,192 animals on the grounds after a rest of nine days since the last drive; 115 of these 1,192 seals were old bulls, all over 6 years, and most of them 7 and 10 year olds, and all the balance, outside of the 241 animals knocked down, were yearlings, chiefly, a few "runty" 2-year-olds, a few bitten 4-year-old "wigs," and a few 5-year-olds. *Every 4-year-old "wig" was taken, as at Polavina yesterday, for the first time this season.* Every "smooth" 4-year-old was taken in the first drives and now, the dregs are drawn also!

These young bulls vary remarkably in this matter of being with



A drawing from nature by the author.

A STROLL ON LUKANNON BEACH, SAINT PAUL ISLAND, JULY 13, 1872.

Every pool of these long sand beaches between Jakkanon and Polayina, and Polayina and Northeast Point, in 1872-1874 was covered with bachelor seal bands, "hauling in" and "hauling out" day and night during the breeding season, together with a large number of old bulls which had been whipped off from the rookeries by their rivals; sulkily and morose, they slowly and reluctantly got out of the pedestrian's path.

manes, or "wigged," or not, at the culmination of their fourth year of growth, just as young men at 18 vary as to having moustaches or beard or not. The "smooth" or unwigged 4-year-old is a fine skin, but the "wigged" 4-year-old is a poor one.

[Thus far this season until yesterday morning, I observed that from the beginning, though every "smooth" 4-year-old was clubbed, yet every "wigged" one of that age and upward was never taken unless struck down by accident.

I have seen once in a while a 3-year-old so wigged as to be a really poor skin; but that is a rare example when found of this age, and, for that matter, the "wigged" 4-year-olds do not number one-tenth of their class as they grow up.

July 19, 1890, 4.30 a. m.—As I go over to the *Rush* at the East Landing I observe that not a single young male seal is on Zoltoi sands this morning—not one has hauled there thus far this season.

I leave for St. George Island on the *Rush* at 5 a. m., arrive there at 11 a. m.

FIELD NOTES ON ST. GEORGE ISLAND.

July 19, 1890.—I made a careful survey of the North rookery this afternoon and its hauling grounds. The perfect desolation, the grass growing, flowers blooming over the polished hauling grounds of 1873-74 are as much, or even more marked here, if possible, than on St. Paul. The natives, ever since this season of 1890 opened, have been scraping the rookeries, and, up to this morning, had taken but 2,964 skins, ruled by the standard of nothing under a 7-pound pelt (which was started as the rule on St. Paul but dropped day after day down to 5-pound skins this morning). These St. George natives were *unable to get out of every 1,000 animals driven up more than 50 to 60 such 7 and 12 pound skins* as the rule of killing called for. The order was given to-day for Webster to take everything down to 5 pounds in the drive then awaiting, and he did so for the first time this year, getting about 640 this evening out of the herd, some 2,500 or 3,000 animals all told. The only seals escaping were the yearlings and old bulls. Every "wigged" 4-year-old knocked down, and several yearlings, by accident, in shaving so fine down to 5-pound skins.

July 20, 1890.—I examined this morning, one by one, the skins that were taken from the drive of yesterday. Three-fourths of them will not weigh more than $5\frac{1}{2}$ pounds, or belonging to the small grade which was ordered not taken until yesterday. Had this standard not been lowered to these small skins not over 150 would have been secured; as it was, 641 were taken.

At Zapadnié, where I went this morning, I observed another drive, which has been saved up for a week. Five hundred and twenty-one skins were taken, as per the above standard. Had the standard not been thus lowered not over 60 or 75 skins could have been taken from this drive. Mr. Webster freely admitted to me, in the presence of Captain Lavender and his son, that he had taken these small skins yesterday, and to-day, for the first time this year. Had he taken them in June and early in July, he would have nothing to-day, on this field but yearlings and half bulls.

The hauling grounds at Zapadnié are simply grass-grown; those at Starry Arteel, the same. The Great Eastern parade is a mere suggestion, and Little Eastern has not had a single drive made from its faint reminder of a once good resort for holluschickie.

In the wake of this drive to-day I saw a number of pups which had

been swept along in the driven herd—their mothers gone in it—they left to perish behind. The podding of these pups way back by the 20th of July on to the abandoned hauling grounds, so that the holluschickie can and do mix with them and their mothers, makes the act of driving from this hour forth, during the remainder of the season simply ruinous to the rookeries: since, bad as it is to-day, it would become worse and worse as it progressed every day after.

July 22, 1890.—These hauling grounds of St. George, which were never by nature of the land and life thereon, as broad and extended as those of St. Paul, were in 1873, polished very brightly by the holluschickie: but that same utter desolation which prevails over them at St. Paul also prevails here. The driving, however, thanks to the good sense of Webster, has not been so excessive as it would have been had a less experienced sealer been in charge. For instance, driving every day from a given hauling ground this season will not yield at the end of a week's work any more seals than it would were the drive made but once in all that time. In 1872–1874, however, so many seals were on hand at every place, that it was necessary to take no more each day than the working force of skimmers at the village could handle. But when the seals are scarce, as they are everywhere this year, it is folly to rake and scrape the ragged edges of these breeding rookeries every day or two for a mere handful of holluschickie which can be secured just as well if driven all up once a week. It is the driving, as well as the clubs, that kills.

The method of driving as now ordered, makes the selection of holluschickie, after the pups begin to pod in bulk on or before the 20th of July every season, utterly impossible without sweeping cows into the drive, and dragging their young out to die in the track of this drive. Every day on from this 20th of July, makes the work of such driving worse and worse for the rookeries; so much so that no driving under any and all circumstances after that date ever should have been permitted or will be permitted again if our Government means to preserve and perpetuate these fur-bearing interests on the Priblov Islands.

Bad as driving in effect on the holluschickie is, the driving of cows is certain injury to them; they are fuller in habit and less muscular; their milk glands become inflamed and swollen, and the result must ensue of "garget" or "milk sickness," so well known in cats, dogs, and cattle. That means death or permanent disability, even if the cows are driven but once—death to both cow and her pup left behind, since that pup will not be permitted to suckle any other.

The scraping or sweeping of these rookeries on St. George did not fairly begin until 1884; while it was not really begun in earnest on St. Paul until 1886 or 1887; but the driving here has been lighter than it would have been had I not changed the quota from 25,000 to 10,000 in 1874. In 1887 the difficulty of getting even 15,000 7-pound skins before the end of July, was evident, far more difficult than that of securing 25,000 before the 20th of July in 1872; yet, in spite of this marked deviation from the working record of the preceding seasons, the Treasury agents of 1886–87, in charge of these interests, actually sent in a report to the Treasury Department criticising my figures of 1873–74 and declaring that there were eight times as many fur seals on the St. George rookeries then, as when I made my surveys in 1873–74!

I can not see any difference in the character of the holluschickie here on St. George from those I have studied all summer on St. Paul; indeed, I know that these animals haul on either island indifferently, as they go and come throughout the season. They will haul out here to-day;

and next week, just as likely as not, many of them will be over on St. Paul hauled out there for a spell in turn.

One of the queerest ideas of how to help the holluschickie to haul (when there were none to haul) was a desperate notion of the lessees' agent here last summer, who, on the 9th of June, actually went down into the ragged sea margin at the Near or North rookery, and drove away a few old bulls which had hauled into an empty path of the holluschickie which leads up by the "Raichka." This was done to help the holluschickie "to land faster!"

July 25, 1890.—Weighed 100 skins as they came over from Zapadnië to-day, from the little salt house there, and which were taken on the last day of killing, the 20th instant. Three-fifths of the whole number weighed were $5\frac{1}{2}$ to 6 pound skins—average to "long" 2-year-olds; the balance, 7 to $7\frac{1}{2}$ pound skins, four 8-pound skins, and one $9\frac{1}{4}$ -pound skin, and one 4-pound skin (or yearling).

July 26, 1890.—Weighed 176 skins of the Zapadnië catch of the 20th instant, just as they came over on the burro train. As I handled the skins they ran thus:

Skins.	Weight.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>
64	$5\frac{1}{2}$	352
26	5	130
4	4	16
42	6	252
20	$6\frac{1}{2}$	130
12	7	84
4	$7\frac{1}{2}$	30
2	8	16
1	$8\frac{1}{2}$	$8\frac{1}{2}$
1	9	9
176	-----	1,027 $\frac{1}{2}$

making the average as low as $5\frac{1}{2}$ pounds per skin. This is the run of the last killing on St. George on the 19th and 20th instant. Had the standard first ordered been adhered to, only 20 skins would have been taken instead of 176 in the above catch.

July 30, 1890.—A stiff southwest wind ever since yesterday, has kicked up such a rough sea that to-day, by noon, nearly every seal by the island has hauled out on shore, and it is a good afternoon to inspect the rookeries in so far as my search for pups of last year or yearlings goes.

A careful examination of the largest rookery of this island, North, revealed the presence of about 750 holluschickie—700 at the least, and possibly 900. *All were yearlings*, save a small percentage of 2-year-olds, with scattered examples, wide apart, of 3-year-olds and a dozen perhaps of 4-year-olds.

They were all hauled out (with the exception of one pod of some 150 near the Raichka) and commingled with podding pups and cows. A drive could not be made there to-day of more than 200 holluschickie without driving as many cows and pups.

Such a day as this should show up at least 4,000 yearlings on these spots of that rookery alone. Where are these yearlings?

The pups at the water's edge are beginning to familiarize themselves with their native element, essaying to swim in the pools and surf wash at sheltered spots. Those pups, where the surf directly breaks upon the sea margin and strikes the beach with unbroken force, are not in the water at all to-day. A vast majority of the pups will not get into the water before the end of the next two or three weeks.

I observe a very large proportion of yearling cows scattered all over the breeding ground from end to end near the sea margin, while the yearlings of both sexes are completely mixed up on the outskirts of the rookery here and everywhere else, commingled with the adult cows and their young pups.

August 1, 1890.—Heavy rain has fallen and a stiff southwest gale raged all day yesterday. It cleared up this afternoon. Desiring to see the hauling grounds at Zapadnië and the rookery there immediately after such a storm, where the surf breaks in with full force and fury, I went over and made a survey of the entire field. Since my last visit the pups have podded to the uttermost length and breadth of the place, 1,000 to 1,500 feet back from the surf margin of the rookery, and way up and into the green grass and moss in the rear. Squads of holluschickie mingled in with them everywhere, and their mothers, of course; but how many in proportion I can not say, since the yearlings and the 2-year-olds so closely resemble the young cows when all huddled up and startled by the approach of man.

However, if you walk slowly and occasionally sit or stoop down for a few minutes, when an unusual rush by the seals seems pending, you can traverse every one of these breeding grounds without startling or stampeding many of the seals thereon into the water. As these animals, first startled by your unexpected form, cough, spit, snort, and then turn to fly, at that moment you gently squat down. Then they pause, turn curiously to look, and notice that you are not following or moving; then they bolt, altogether, and regard you intently for a minute or two. If you do not move in a few moments more they all resume their occupation of sleeping or playing one with another, as they were doing when you first startled them by your coming.

Then, if you rise slowly to an erect posture and resume your walk very quietly and slowly along parallel with or away from them, they do not seem to pay you any special attention. They will not again start to run or "flip flapper" back into the sea.

August 1, 1890.—Natives drove a pod of 97 seals up for food this morning. Only 5 skins out of the whole number of the 97 seals killed (for they were all killed) were 7-pound pelts, the rest yearlings and 2-year-olds; 85 per cent yearlings.

St. Paul Island, August 9, 1890.—A careful survey of the Reef and Zoltoï, Garbotch, and Gull Hill hauling grounds this morning discloses no change whatever in the lonely character of these places, and I observe the same scarcity of yearlings that has recently impressed me on St. George.

Not a single young male seal on Zoltoï sands this day, and none have hauled there at all this season; and it is safe to say that none will until the pods of swimming pups in October come here from Garbotch. What few holluschickie are left here have become so demoralized by the driving early in June, and up to the 20th of July, as to now haul in among the podded cows, where you can easily distinguish them right and left among the "matkahs" and pups. It would be very difficult now to say, as we look out over the field, how many of them are thus hauled out there to-day, but the spectacle is a quiet, sad one to see—that silent parade ground of the Reef, ahead of us. Over its whole smooth sweep a soft, velvety grass and moss is springing up bright and strong under the stimulus of an August air. *That wide expanse is entirely deserted by seals* where in 1872 it was fairly alive with restless trooping thousands and tens of thousands.

That southwest gale of the 30th and 31st of July, which I experienced

and followed so closely on St. George, seems to have destroyed a great many pups over here on the Garbotch sea margin. There are 17 dead pups lying half buried in the sands of Zoltai right before and under my eyes.

In closing these copies of my field notes on the hauling grounds the following is pertinent. During the killing season several of the elder men, natives on St. Paul, expressed a desire to talk with me about the condition of affairs. I asked them to wait until the work of the season was over, then to come up to the Government house when I returned from St. George, where what they had to say could be heard by all of the Treasury officers as well as myself. The notes below of this interview were made by Mr. Murray. I copy them literally:

VILLAGE OF ST. PAUL, *August 6, 1890.*

In the presence of and hearing of Henry W. Elliott, Charles J. Goff, Joseph Murray, and S. R. Nettleton, United States Treasury agents, the following natives (old men) were called into the Government house by Professor Elliott and examined by Messrs. Elliott, Goff, Murray, and Nettleton, Treasury agents (Simeon Meloviedov, interpreter): Kerick Artamonov, Kerick Booterin, Vasilie Sedoolie, Markeel Vollkov, Eupheem Korchootin, Fedosay Sedick.

Mr. Murray took the following notes of the conversation:

Q. Do you remember Professor Elliott being on this island (St. Paul) in 1872?—A. Yes; we remember him well.

Q. Do you remember that thousands of holluschickie were then hauling at Southwest Point?—A. Yes; we do remember.

Q. Were there thousands and thousands lying there undisturbed—that there were no drives made from that point?—A. There were no drives made from there for many years, notably—1872, 1873, 1874, and 1875—and yet there were thousands and thousands there and at Zapadnie and Middle Hill, from which we made no drives.

Q. Do you remember the small rookery and the hauling grounds on Professor Elliott's map just west of Zapadnie, and called by him "Kursoolah"?—A. Yes; we remember it distinctly—there was a small rookery there and a large hauling ground.

Q. Are there any seals hauling there to-day, or have you seen any seals at Southwest Point?—A. No; there is nothing there to-day but growing grass—where it used to be covered with seals from point to point.

Q. Do you remember the hauling grounds west of Middle Hill, in English Bay and Zapadnie, in 1872, 1873, and 1874?—A. Yes; it used to be covered with seals in those years; we drove them from English Bay—from half-way over only—and even then we would often leave half of the seals behind, and were often obliged to divide the drives into four or five divisions because the seals were so numerous.

(The above answer was given by Kerick Booterin, who at that time was chief.)

Q. Do you remember the hauling grounds of Polavina, and is it true that in Mr. Elliott's time there were thousands upon thousands of young male seals hauled upon those grounds undisturbed by any driving from beginning to end of the seasons of 1872, 1873, and 1874, inclusive?—A. Yes; there were lots of seals there, thousands upon thousands, undisturbed.

Q. Do you remember the hauling grounds of Stony Point and the beach around it?—A. Yes, we know the place well, and there were seals scattered there all along it.

Q. Are there any seals there to-day?—A. No; they are all gone.

Q. Do you remember the hauling grounds between Webster's house and Polavina?—A. Yes; and there used to be lots of seals there, especially at a point called "Dalnoi."

Q. Are there any seals there to-day?—A. No; there are none there. We drove there this year, but could not get more than 100 seals.

Q. Do you remember old man Webster in 1872 to 1874 at Northeast Point and where he got his seals in those days?—A. Yes; we do remember. Artamonov was then second chief and worked with Webster six weeks.

Q. (To Artamonov.) Is it true that Webster got all his seals from that strip of sand beach on the north shore, west of Cross Hill?—A. Yes; there were always a sufficient number.

Q. Did Webster drive from or near a rookery then at Northeast Point?—A. No; he never allowed the men to go near a rookery.

Q. Where do they drive from at Northeast Point to-day?—A. They drive from all around the point.

Q. Do they go among the cows to get out the holluschickie?—A. No; they go right above the cows and drive from the very edges.

Q. Was any man now present at a drive at Northeast Point this year?—A. Yes, three of us.

Q. At what date were you there?—A. At the beginning of the season and during the third week.

Q. Were any of you at Northeast Point since the "podding" or "spreading" out of the cows and pups occurred?—A. No.

Q. (To Kerick Booterin and to Artamonov.) Were you born at Northeast Point and what are your ages?—A. Yes; and Artamonov is now 65 and Booterin is 61.

Q. (To same two men.) Do you remember whether there were more or less seals before 1872 than then (1872-1874) or afterwards?—A. In 1868 the hauling grounds and rookeries were at their very fullest—the entire ground from the lake upward being covered with seals.

Q. When did you first notice the shrinking or scarcity of seals, and when did you first talk about it among yourselves?—A. In 1877 we first began to notice that the holluschickie were getting fewer, and have continued from that year to grow less and less.

Q. At what time did you talk among yourselves as to when the time would come when there would be an end to the seal business?—A. (By George Booterin.) I began to see in 1877 that this trouble was ahead, but whenever I or my people spoke about it we were told by the company men ("Americans") (sic) that it was not of our business and we must not talk about it. Whenever we talked about the seals the company men threatened to send us away from the island.

Q. (By Mr. Goff to Booterin.) Was that the reason you would not talk to me last year?—A. I hardly remember now why I did not like to talk about the seals.

Q. What do you men think of the effect on seal life of the driving of the seals?—A. When the old Russian Company drove, and the drivers came in here, they never killed anything over a 3-year-old; all over that were either never disturbed or else spared, and if the same thing had been practiced ever since there would be no scarcity of seals to-day.

Q. How many 3-year-olds do you think you can get next year?—A. If they were to drive all the seals on this island next year they would get nothing, and would only disturb and injure the rookeries.

(By Kerick Booterin.) Whenever any killing is allowed, if they never kill any over 3 years old, and kill only 3 years old and under, I believe there would be no injury done.

Q. Do any of you remember the zapooska of 1834?—A. Yes; Booterin and Artamonov remember it well.

Q. How many seals were killed after the first year of that order, and how were they killed?—A. The first year we killed only 100 holluschickie, and we increased the number every year afterwards.

Q. What do you think of another zapooska for to-day?—A. (By Kerick Booterin.) When the Russians ordered their zapooska, little by little afterwards, everything grew better, and if the same thing is repeated to-day, everything will grow better, and if it is not done, no seals will come here. We observed that the men sent here by the Government since old Captain Bryant, till we saw you men and talk now with you, took no interest in the seals, but whenever busy, were engaged in shooting our hogs; in fact, they very seldom visited the rookeries.

Q. Did you men ever talk or attempt to talk about seal life to any of the Government officers before Mr. Goff's time?—A. Yes, on several occasions, and they answered—and they answered we did not know anything about it.

Q. Have you any questions you would like to ask the Government?—A. Yes; we want to know what is to be done about the seals.

MR. ELLIOTT. We propose to immediately inform the Secretary of the Treasury of the exact condition of affairs, and we know that he will take care of the seals and the people too. He is the only man who can talk, but he sent us here to get the facts and he will act upon that information. None of us in Washington knew of the true condition of affairs up here. Until Mr. Goff wrote down last year to the Secretary of the Treasury, not a word has ever gone from here since 1870, which even hinted at any danger to the seals.

KERICK BOOTERIN. We think had it not been for Mr. Goff the seals would all be gone. We are not now afraid of being hungry, although we can not take seals.

MR. ELLIOTT. We want you natives to understand that the Government cares more for the preservation of the seals than for any money that may be received in the form of a tax.

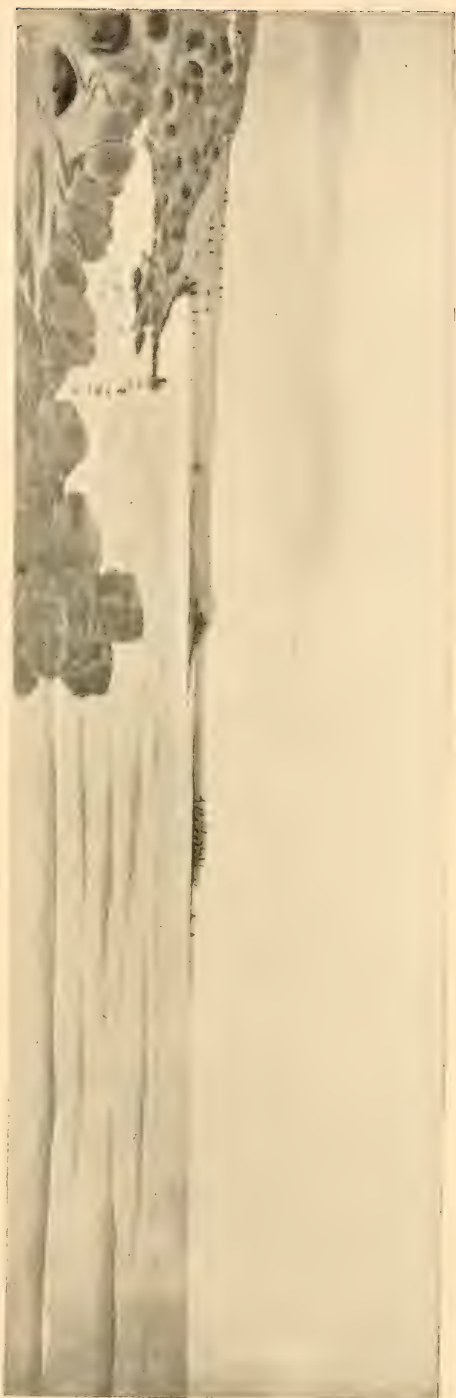
The interview closed at this point.

The foregoing statements are made *only by those natives who in 1872-1874 were old enough then, to really observe and think*; these men are the only survivors of that age when I was on the island in 1872. When the above interview was in progress Kerick Booterin during the whole time held a small notebook in his hand, open, and not seeing

A drawing from nature by the author.

SEA LION NECK, NORTHEAST POINT, OR NOVASTOSHNAH, SAINT PAUL ISLAND, JULY, 1890.

View looking north from Webster's Point, over the abandoned hunting and breeding grounds of the fur seals. This neck was the favorite trapping place for the capture of sea lions in 1872-1874 by the Aleuts; it is the best locality on the Pribilof Islands for that purpose.



him make any notes or refer to it, at the close of the talk he was asked by the interpreter what he wanted to do with the book—what he had there. He then showed us the following written statement (in Russian) which he said he made for me, as he was not certain whether we should meet and talk or not, before I left the island:

[Translation.]

AUGUST 6, 1890.

Pardon me, Mr. Elliott, I never call myself a big man, but now I shall talk what I know, and will not tell what I do not know.

I think that as the hauling grounds were they will be if the drives were made and the killing made from small ones, the large ones spared. If that is done, I think all will be well. If that is not done, more harm will come to the rookeries so that there will be no more hauling out on the rookeries. If a zapooska is made, I think all will be well. If the zapooska is not made, then we will lose the land if the Treasury does not look out. If the hauling grounds could sustain the company, then the grass and everything like it would not grow there now. This loss will fall upon us and upon our children. We can not longer sit quiet and talk about there being lots of seals.

GENERAL MEMORANDA CONCERNING THE SEAL ISLANDS.

ST. GEORGE VILLAGE, *July 29, 1890.*

In many respects a resident here enjoys a far more pleasurable life than if stationed at St. Paul. He has a finer view of the sea, which in storms, boils at his feet in surf of surprising power, or laves the black basaltic base of the village cliff, in low rippling murmurs when calm days prevail. He can see from morning until night, endless flocks of waterfowl, from the 26th of every April until the end of every October, flying to and from the uplands and cliffs, some days beating their way stubbornly against a stiff head wind or darting off through the fog or mist like bullets from a gun.

I notice a great increase in the floral display over that exhibited here in 1873-74; indeed, I think that the flowers at Garden Cove are as numerous and as beautiful as can be seen on St. Paul. They were not so in 1873.

The grass in and around the village here is the finest turf in Alaska; it is a close-growing fine-speared species or variety that very closely resembles the blue grass of Kentucky. The seal "road" leading to the eastern rookery is of this sod, sodded smoothly, and it crops out on the south side at Garden Cove especially attractive.

Such a compact, smooth, glassy green turf makes the little hamlet here look attractive, as it is kept clean everywhere and not littered or strewn. The water here is abominable, however—nothing but the seepage from the hilly tundra back of the village—and perhaps owes much of its "flatness" to that drainage which it represents of the "Choochkie" ridges, which breed here by millions from June to August 30 and September 10, all over the uplands around the town.

On St. George in 1868 no regular list was made of the number of seals taken, but it seems likely from all I can gather that at least 30,000 were killed. On St. Paul, also, no regular count was made, but H. M. Hutchinson and Daniel Webster, who were on the ground then sealing there, assure me that the number did not exceed 240,000. This was followed in 1869 by the killing of 60,000 or a few more on St. Paul and St. George for natives' food, the skins being salted, and finally taken by the Alaska Commercial Company next year—i. e., most of them—since they did not get possession until August, 1870, and then the sealing season was substantially ended for the year.

The condition and appearance of this little town of St. George is one of good order and cheerfulness. The 21 native houses here are occu-

pied by 98 souls. There were 120 when I was here in 1873. The little streets or roadways are clean and well drained. The grass in and about the village is much better than at St. Paul, and a small sheep paddock directly under the window of the Treasury agent's house is one that suggests a Kentucky blue grass meadow most forcibly.

GENERAL MEMORANDA.

THE FOOD OF THE FUR SEAL AND ITS RELATION TO THE FISHERIES OF ALASKA AND THE NORTHWEST COAST.

In my monograph of the seal islands of Alaska (p. 64) I called attention to the amount of fish that a fur seal probably consumed every day on an average throughout the year, showing that these animals undoubtedly required and secured some 6,000,000 tons of fish as food annually. I said:

Think of the enormous food consumption of these rookeries and hauling grounds; what an immense quantity of finny prey must pass down their voracious throats as every year rolls by. A creature so full of life, strung with nerves, muscles like bands of steel, can not live on air, or absorb it from the sea. Their food is fish, to the practical exclusion of all other diet. I have never seen them touch, or disturb with the intention of touching, one solitary example in the flocks of waterfowl which rest upon the surface of the water all about the islands. I was especially careful in noting this, because it seemed to me that the canine armature of their mouths must suggest flesh for food at times as well as fish; but fish we know they eat. Whole windrows of the heads of cod and wolf fishes, bitten off by these animals at the nape, were washed up on the south shore of St. George during a gale in the summer of 1873. This pelagic decapitation evidently marked the progress and the appetite of a band of fur seals to the windward of the island, as they passed into and through a stray school of these fishes.

How many pounds per diem is required by an adult seal, and taken by it when feeding, is not certain in my mind. Judging from the appetite, however, of kindred animals, such as sea lions fed in confinement at Woodward's Gardens, San Francisco, I can safely say that 40 pounds for a full-grown fur seal is a fair allowance, with at least 10 or 12 pounds per diem to every adult female, and not much less if any, to the rapidly growing pups and young holluschickie. Therefore, this great body of 4,000,000 and 5,000,000 of hearty, active animals which we know on the seal islands must consume an enormous amount of such food every year. They can not average less than 10 pounds of fish each per diem, which gives the consumption as exhibited by their appetite of over 6,000,000 tons of fish every year. What wonder then that nature should do something to hold these active fishermen in check?

An old sea captain, Dampier, cruising around the world just about two hundred years ago, wrote diligently thereof (or, rather, one Funnel is said to have written for him), and wrote well. He had frequent reference to meeting hair seals and sea lions, fur seals, etc., and fell into repeating this maxim, evidently of his own making: "For wherever there be plenty of fysh, there be seals." I am sure that, unless a vast abundance of good fishing ground was near by, no such congregation of seal life as is that under discussion on the seal islands could exist. The whole eastern half of

I feel confident that I have placed this average of fish eaten per diem by each seal at a starvation allowance, or, in other words, it is a certain minimum of the whole consumption. If the seals can get double the quantity which I credit them with above, startling as it seems, still I firmly believe that they eat it every year. An adequate realization by ichthyologists and fishermen as to what havoc the fur-seal hosts are annually making among cod, herring, and salmon of the northwest coast and Alaska would disconcert and astonish them. Happily for the peace of political economists who may turn their attention to the settlement and growth of the Pacific Coast of America, it bids fair to never be known with anything like precision. The fishing of man, both aboriginal and civilized, in the past, present, and prospective, has never been, nor will it be, more than a drop in the bucket contrasted with the piscatorial labors of these ichthyophagi in those waters adjacent to their birth. What Catholic knowledge of fish and fishing banks anyone of those old "seecatchie" must possess, which we observe hauled out on the Pribilof rookeries each summer. It has, undoubtedly, during the eighteen or twenty years of its life explored every fish eddy, bank, or shoal throughout the whole of that vast immensity of the North Pacific and Bering Sea. It has had more piscine sport in a single twelvemonth than Izaak Walton had in his whole life.

Bering Sea, in its entirety, is a single fish-spawning bank, nowhere deeper than 50 to 75 fathoms, averaging perhaps, 40. There are also great reaches of fishing shoals up and down the northwest coast from and above the Straits of Fuca, bordering the entire southern, or Pacific, coast of the Aleutian Islands. The aggregate of fish food which the seals find upon these vast ichthyological areas of reproduction must be simply enormous, and fully equal to the most extravagant demand of the voracious appetites of *Callorhini*.

Using the above as a suggestion, several writers have hastily assumed that it would be a good thing if the seals were exterminated; that by exterminating them, just so much more would be given to our salmon and cod fishermen to place upon the markets of the world. These men forget the fact that all animal life in a state of nature, existing to-day as the fishes and seals do, is sustained by a natural equilibrium, one animal preying upon the other, so that year after year only so many seals, so many cod, so many halibut, so many salmon, so many dogfish, and so on throughout the long list, can and do exist.

Suppose, for argument, that we could and did kill all the seals; we would at once give the deadly dogfish (*Squalus acanthias*), which family swarms in these waters, an immense impetus to its present extensive work of destruction of untold millions of young food fishes, such as herring, cod, and salmon fry, upon which it feeds.

A dogfish can, and does destroy every day of its existence, hundreds and thousands of young cod, salmon, and other food fishes—destroys at least double and quadruple as much as a seal. What is the most potent factor to the destruction of the dogfish? Why, the seal himself; and unless man can and will destroy the dogfish first, he will be doing positive injury to the very cause he pretends to champion if he is permitted to disturb this equilibrium of nature, and destroy the seal.

OFFICERS OF THE GOVERNMENT.

List of resident Treasury agents who have served on the seal islands of Alaska from 1869 to 1890.

CHIEF SPECIAL AGENTS.

No.	Name.	Seasons of service.
1	Charles Bryant.....	1869 to May 20, 1877.
2	John M. Morton.....	1877 to 1878.
3	Harrison G. Otis.....	1879 to 1881.
4	Henry A. Glidden.....	1882 to July 1, 1885.
5	George R. Tingle.....	1885 to April, 1889.
6	Charles J. Goff.....	1889 to date.

ASSISTANT SPECIAL AGENTS.

7	Samuel Falconer.....	1870 to 1876.
8	Henry W. Elliott.....	1872 to 1873.
9	Francis Lessen.....	1872 to 1874.
10	George Marston.....	1875 to 1877.
11	William J. McIntyre.....	1874 to 1876.
12	J. H. Moulton.....	1877 to 1882.
13	B. F. Scribner.....	1879 to 1880.
14	John W. Beaman.....	1879 to 1880.
15	W. B. Taylor.....	1881 to August 3, 1881.
16	George Wardman.....	1881 to May 29, 1885.
17	Louis Kimmel.....	1882 to 1883.
18	Herbert G. Fowler.....	1884 to July 1, 1885, only.
19	A. P. Loud.....	1885 to 1889.
20	Thomas J. Ryan.....	1885 to 1886.
21	J. P. Manchester.....	1886 to 1889.
22	William Gavitt.....	1887 to 1888.
23	Joseph Murray.....	1889 to date.
24	S. R. Nettleton.....	1889 to date.
25	A. W. Lavender.....	1890 to date.

In addition to the above list of names of regularly specified seal island agents of the Treasury Department, S. N. Buynitsky, a clerk in the customs division, Office of the Secretary of the Treasury, was detailed as a temporary agent and served through the season's work of 1870 on St. George, three months; then he passed another period of nine months on St. Paul, from July 31, 1871, to April 26, 1872, in charge. But he was not regularly enrolled or appointed as a Treasury agent for the seal islands.

In 1874, under order of special act of Congress, Henry W. Elliott and Lieut. Washburn Maynard, U. S. N., made an elaborate and detailed survey of the seal life, as embodied on these islands.

SEAL PIRATES AND THEIR WORK ON THE ISLANDS.

The following citations from the daily journal of the Treasury agent's office on St. George Island in reference to the visits of marauders or pirates are given to show the general impression made at the time, means of prevention, etc.

September 10, 1884.—Schooner reported at Zapadnie.

September 11, 1884.—About 12.45 a. m. we noticed boats coming toward the shore. * * * As a warning to let them know, and not to land, we fired a half dozen shots. The marauding boats immediately turned about and disappeared in the fog and darkness (p. 376).

July 2, 1885.—* * * About 5 o'clock the watchman came over from Zapadnie with the news that a schooner was in sight, and its crew were catching seals in the water by shooting. * * *

July 3, 1885.—The men we sent to Zapadnie yesterday evening * * * returned early this morning, reporting they could see no pirates or signs of any (p. 413).

July 20, 1885.—* * * The men with the boat brought the information that they had seen marauders near Starry Arteel rookery. * * * We failed to catch the rascals, but found their marks in the shape of many seal skeletons, some fresh, showing that they had been killed but the night before.

June 22, 1885.—(At same place.) * * * On the arrival of Mr. Morgan and myself on the ground we found the marauders gone, but their work left on the beach, 120 seal skins and evidence enough to satisfy the Government agent that between 600 and 700 seals had been killed, nearly all females. * * * We found hundreds of skinned seals hid under rocks and in caves (p. 419).

September 7, 1885.—* * * The marauders who are in the habit of hanging around this island at this season of the year are keeping themselves at a distance this year, for which we are very much obliged (p. 427).

June 17, 1886.—At 3 a. m. this morning the chief reported that the two watchmen at Starry Arteel discovered within 400 feet of shore a ship's boat, and they fired four shots in all and the boats left. This occurred about 1 a. m. * * * Arkenty reported no vessels at Zapadnie last night, but fog was heavy and it was dark (p. 469).

August 6, 1886.—Dense fog. Went to Starry Arteel rookery, taking chief with me to see the dead seals reported found there yesterday. They had been killed by clubbing and had evidently been dead a week.

August 9, 1886.—* * * Schoonersighted about 8 a. m. some 6 miles to the north, heading west. Soon after natives reported seeing a boat just off bluff at West Point. * * * Two boats close in shore at West Point. Fired upon them, when they at once pulled out into the fog in direction of the schooner.

September 24, 1886.—At about 1 p. m. the revenue steamer *Bear* came to anchor in front of the village. * * * Captain Healy reports that in his opinion all marauding vessels (six) have left these waters (p. 487).

November 17, 1888.—* * * At 12 m. saw a schooner from the village at the west end of the island heading to the northwest. Sent second chief and three men to Zapadnie, etc.

November 18, 1888.—* * * Nothing seen of the schooner to-day. Second chief returned to village and reports that some persons had landed, as there was fresh tracks, and the windows of the native house were all broken. No signs could be discovered of much damage being done to the rookery, as the few seals left there at this time are all quiet (p. 196).

September 30, 1889.—* * * Messenger from Zapadnie reported that men had landed and killed seals on the rookery last night.

October 1, 1889.—* * * At 10 o'clock p. m. three boats hove in sight and came up to within a few yards of where we were concealed. Here they separated, on.

going toward the end of the rookery and two steaming toward the center of the rookery, * * * so I fired across the nearest boat and gave orders to the men to fire. Instantly the boats turned and pulled for the open sea (p. 277).

October 21 and 22, 1889.—Schooner anchored off Zapadnié 21st. Captain came ashore on 22d and spoke to watchmen at Barrabkie, saying he belonged to the Alaska Commercial Company. Compasses out of order, etc., bound for Kamchatka. Natives refused to go aboard with him, and he went off and got under way—left. Nothing seen of him since, and no other vessel this year.

DESTRUCTION OF SEAL PUPS BY KILLER WHALES CLOSE AROUND THE ROOKERIES, IN THE SEA.

The following citations from the Treasury agent's journal on St. George Island refer to the appearance of the killer whales (*Orca gladiator*) and the havoc they create. There is but one brief entry of the kind in the St. Paul journal. I am not surprised at it, however, because I did not see a killer whale around St. Paul during the whole of my visit there last season, May 21 to August 11, inclusive. But at St. George, the letter of Captain Lavender, which follows, declared the presence of a great many.

September 15, 1881.—A school of apparently 10 or 12 killers ran into the shoal around the near rookery to-day and soon made havoc among the pups. It was estimated from the manner in which the seal were thrown up out of the water that 25 or 30 were eaten by their greatest enemies.

September 18, 1881.—Another visitation of killers similar to that of 15th instant (p. 269).

May 9, 1882.—A school of killers were also seen this morning for the first time since the seals left last fall (p. 286).

October 29, 1882.—The weather being fair and favorable to-day, I made a trip to Starry Arteel rookery, noticing on my way there that a good many so-called killers were chasing and destroying young pup seals in the sea off the beach (p. 304).

September 3, 1885.—The killers put in an appearance in force about the beginning of this month, remaining or coming near every day up to this date, to the great discomfiture (sic) of the pups. The number of pups devoured by them must be great (p. 429).

May 5, 1886.—Three killers passed by to-day—the monsters (p. 456).

September 14, 1887.—* * * A school of killers made their initial appearance. There were about eight in the school. They passed the length of the island three times and killed all the seal and sea lion they could get.

September 22, 1887.—Killers again appeared this afternoon. There were about 15 of them. They passed from east to west and killed many seals.

October 16, 1887.—* * * A school of killers, about four in all, came at 8.30 a. m. from east (p. 39).

October 19, 1887.—* * * Killers came again this evening, passing from east to west. Their work, as usual, very destructive. The gulls followed, picking up remnants of meat.

October 21, 1887.—Killers at an early hour this morning, and they cleared the sea of all the seal that were in it at the time (p. 50).

July 1, 1888.—* * * Killers have been in this vicinity for a week, and were in front of village all afternoon (p. 158).

October 23, 1888.—* * * There are many pup seals in the water now, and we often see killers among them. I think that they kill many of the pups (p. 192).

In a letter addressed by Capt. A. W. Lavender on this subject to the writer, he says:

I am now stationed on St. George Island as Treasury agent, and not having been long enough on the island to be a competent judge as to the number of seals destroyed annually by these monsters, I have asked the opinion of gentlemen who have spent every season for the last ten years here, and the answers to all my inquiries have been that this species of whale must be destroyed or the seal rookeries will be something of the past in a short time. They also informed me that during the month of October, when the pups first take to the water, they are killed by the thousand, and that the water along the shore of the rookeries is red with the blood of young seals, which fall easy victims to these monsters, having no fears of them. * * *

He closes with the following sensible recommendation:

The next Congress should make an appropriation sufficient to furnish two whale boats and crews with all the modern improvements for the killing of whales, and to

station one boat and crew on each island during the ensuing year, with orders to patrol the islands, daily if possible, and destroy this whale whenever an opportunity is afforded. These boats should be in charge of experienced whalers from some part of the New England States, where this whale and other similar species exist in large numbers. There would be no trouble in obtaining men who are well versed in this kind of whaling, and it is my opinion at the end of the year it would be found that killers were very scarce and would not come near the shore, while their appetite for seal and seal pups would be changed so much that codfish and other similar varieties would be good enough for them. I shall endeavor to write more fully on this subject in the near future when I have had a little more experience on the islands, as I consider it one of great importance.

Truly, yours,

A. W. LAVENDER.

CERTAIN OFFICIAL SURVEYS OF THE SEAL ROOKERIES.

Extracts from the journal of the office of the Treasury agent on St. George Island, in reference to the number of seals thereon, show that several of the assistant agents over there have paid considerable attention to this important subject by making field observations in the breeding seasons since my published work of 1874. *The journal of the St. Paul office does not give any similar evidence of attention until the season of 1889, or until the notes of Mr. Charles J. Goff were entered last year.* All final surveys and population notes of the breeding grounds made before the seals arrive, and not when they are to be seen at the right time for measurement of area and position, viz, July 10 to 20, inclusive, are valueless. In 1884 a distinct note of warning was sounded from St. George by Assistant Agent Wardman; the St. Paul office, however, gave it no attention.

The first survey made after my work of 1873-74 was the following, which seems to have been made in all sincerity; but the extraordinary allotment of space which he gives to the seals, 2 feet in some places and 8 feet in others, is due to the fact that he must have struck those particular 8, 4, and 5 feet areas when the pups were podding back and the cows scattered with them. The work, however, bears evidence of pains and sincerity and is entitled to respect. I made that season of 1874 a total of 162,402; he makes it 198,648 breeding seals and young. His figures of sea margin and average depth show, when contrasted with mine, that his tapeline, and the podding, which it is evident that he encountered, were not safe factors for a close calculation.

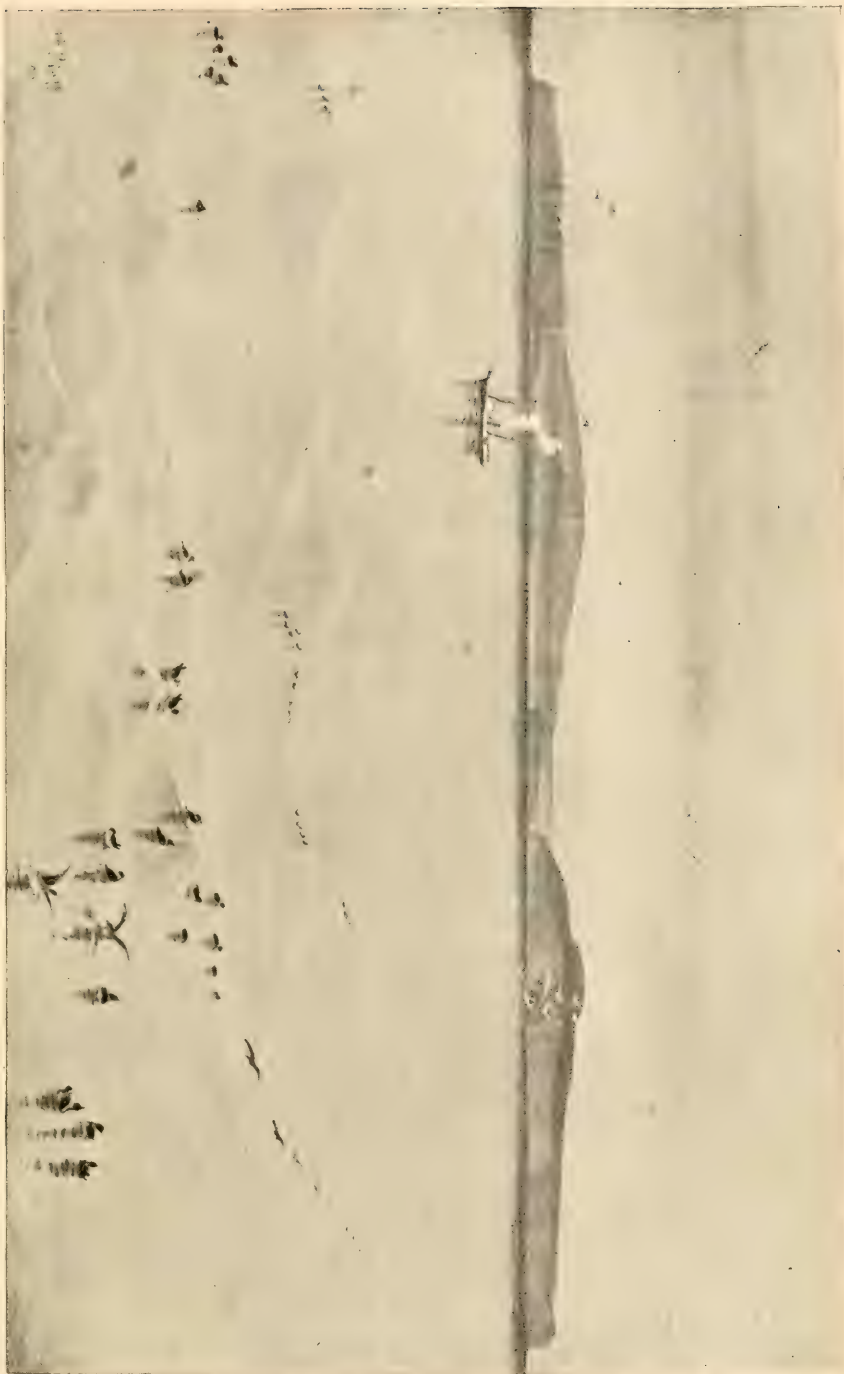
This calculation of William J. McIntyre is copied from his autograph entry in the journal of the Treasury agent, St. George Island.

Table showing the present condition of the breeding rookeries on St. George Island, from a survey made by William J. McIntyre.

[The limits of expansion were defined in the middle of July, 1874, and measured in April of the following year.]

Rookeries.	Length of shore line.	Average breadth.	Space allowed for each seal.	Total bulls, cows, and pups.
			<i>Sq. feet.</i>	
Zapadnié	875	136	5	24,600
Starry Arteel	650	173	3	34,150
North:				
First part	900	41	2	18,450
Second part	900	54½	8	6,112
Third part	1,000	124	2	62,000
Little East	650	72	3	12,356
East:				
First part	260	240	4	15,600
Second part	1,240	49	2	25,380
Total	6,475	111½	a 3½	198,648

a Average.



A drawing from nature by the author.

DARON MEES.
(N. 14° , 10 miles distant.)

ZEPHIE ROBERT,
(NNE., $7\frac{1}{2}$ miles distant.)

WATERFALL HEAD,
(NE. by N., 9 miles distant.)

VIEW OF THE SOUTH SHORE OF SAINT GEORGE ISLAND, PRIBILOF GROUP.

Taken from the *Rush*, August 5, 1890.

With all due deference to Mr. Elliott's opinion that 2 square feet of ground for each seal on the breeding rookeries is approximately correct, I am inclined to the opinion that this is too liberal an estimate for all of the rookeries. In some cases I have allowed 2 square feet, in others 3, 4, 5, and 8 square feet, according to the topography of the ground, its adaptability for breeding purposes, and the condition of the rookery at the time of its greatest expansion, i. e., about the middle of July. It would be utterly impossible for any series of measurements to give the accurate number of seals that haul up on the breeding rookeries or hauling grounds. The least that can be done under the circumstances is to form some basis for measurement during the middle of July, mark the limits of the breeding grounds, and measure them carefully with a tapeline, as was done in this case, before the seals return. This will give their approximate number, and, if carefully done, will not be far out of the way; still these figures are not exact and should be proven by the measurements of 1875.—WM. J. MCINTYRE.

With that work of Assistant Agent McIntyre, all effort in this line by him or his successors seems to have ceased, and not until 1886 was the subject taken up again:

CONCERNING THE OFFICIAL REPORTS OF CERTAIN UNITED STATES
TREASURY AGENTS, 1886-1888.

In my letter of introduction to this report I allude to the extraordinary fact that the official reports of the Treasury agents in charge of the public interests on the Pribilof Islands, for the years 1886, 1887, and 1888, *declare a great increase of fur-seal life on these islands then, over my large figures of 1872-1874; that they make this declaration to the Secretary of the Treasury in spite of or ignorance of the truth, which was just the reverse!* The trouble with these responsible agents of the Government on the islands at that time was that they were mainly engrossed with contemptible personalities between themselves, which caused them to forget and neglect the chief object of their official duty.

The following extracts from the official and regular daily journal of the United States Treasury agent on St. George Island are enough, and will give a very clear understanding of what they were busy about at that time, when the seals were vanishing rapidly from the hauling grounds and fading out on the rookeries.

[Extract copied by the author from Treasury agent's journal, St. George Island, Alaska (official record), p. 166.]

July 30, 1888.—Str St Paul arrived from St. Paul Island at 4.30 a. m. She took on board 9,948 skins. The Rush soon came and Mr. Tingle came ashore. We had a long talk and I gave him a history of affairs on this Island. At the finish of the history he said that he had no fault to find with me and thought that the Co's men had given me a hard time. (Gavitt.)

July 31, 1888.—Mr. Tingle remained ashore. This morning he was receiving from me a verbal statement of how the Co's men try to blacken the character of every one with whom they conflict, when one who was present (*Capt. Loud*), and should know better became abusive and wanted to fight because my statements "reflected on some of his friends." *Mr. Tingle said he believed my statement and intended reporting the matter to the A. C. Co. of San Francisco.* The lie was passed between several and the meeting was lively. Its time that a Gov't officer can come here without being called a thief, drunkard etc. This made some dirty talk to Mr. Tingle about me and I proved to Mr. Tingle how they talk about every one, and after I told him he was perfectly satisfied. (Gavitt.)

Aug. 1st, 1888.— * * * The Rush and St. Paul still at anchor. Mr. Tingle, Clark Mead and several natives went on board. * * * (Gavitt.)

Aug. 2d, 1888.— * * * The Rush and St. Paul at anchor all day. No one came ashore. A boat containing Loud Jack Hall, the cook Alex. Lugebil and some natives (the Oostigoff tribe) went out at 2 p. m. and remained until 3.30 p. m. As they went on board, I suppose some of them had a lot of filth to dump but as Mr. Tingle said on 31st that he was sick of the way things are here, I hardly think Mr. Tingle held any investigation, because he would have come ashore or sent for me. * * * (Gavitt.)

William E. Gavitt remains in charge of St. George until he boards the steamer *St. Paul*, August 9, 1888, en route for Evansville, Ind., on "a leave of absence."

Then he is succeeded by Capt. A. P. Loud, who has been living on this island of St. George with him all summer (as his assistant), and who then takes up the journal for the first time. All entries up to date of August 10, 1888, are in Gavitt's handwriting and name, as the assistant agent in charge of the island.

Captain Loud commences his first service as assistant agent in charge, on page 174, by making an unintroduced entry of the following letter of George R. Tingle. [I am obliged to copy it *verbatim et literatim*.]

[Extract copied from United States Treasury agent's journal, St. George Island, by the author, p. 174.]

ST. PAUL ISLAND, *Alaska*, Aug. 10, 1888.

Capt. A. P. LOUD,

Assistant Treasury Agent in charge of St. George Island.

SIR: in the matter of the charges and complaints of Wm. Gavitt, Assistant Treasury Agent against the Alaska Commercial Cos. Employees on St. George Island as spread on the Journal in the Treasury Agents office, and as set forth to me in his letter of 3d June on file in this Office I have to say that I made an exhaustive investigation into the whole matter complained of to me taking the sworn statement of those persons who had wintered on the Island with Mr. Gavitt as well as his own statement: The affidavits of Dr. C. A. Luts, Daniel Webster and Eugene Kirk disproves wholly all the charges made by Mr. Gavitt, whilst the recital to me by Mr. Gavitt, himself on the occasion of my visit to St. George Island on 30th ulto, only strengthened the Statement of Others and leaves him in the unenviable position of having been the main cause of disturbing the harmony and personal friendly relations which existed among the White people of the Station, where I left him in charge one year ago. Many of the things complained of and recorded by Mr. Gavitt in the public journal *improperly* are of a trivial nature not proper to be written in the Journal. I can only excuse Mr. Gavitt's conduct in many things on the ground of ill health, in taking this Extremely Charitable view I must in Justice say that he manifested a disposition of insubordination to his Superior Officer and was quarrelsome to a degree which became unbearable, many of the entries in his Journal are absolutely false and disgraceful so much so that I cannot refrain from placing on record in the Journal this Letter and therefore ask you to spread it in full upon the Journal With such additional Endorsements by you which your associations and knowledge of Mr. Gavitt warrant.

(Signed)

GEO. R. TINGLE, *Treasury Agent.*

I have been living in the house with Mr. Gavitt for the past sixty seven days and am well acquainted with him. I have no hesitation to say that he is neither truthful nor honorable and that his actions words and general behavior were a disgrace to any man holding a position under our Government.

A. P. LOUD,

Ast. Treas. Agt. St. George Island.

AUG. —, 188—.

In the clear light which the above-quoted extracts throw upon the occupation and concern of these agents of the Treasury Department, I wish to make an especial record of those particular reports made to the Secretary of the Treasury, which, being utterly incorrect and misleading, gave infinite aid and comfort to the cause of the pelagic hunters, and worked serious harm to the public interests of our Government.

[The bogus official report of 1886.]

OFFICE OF SPECIAL AGENT TREASURY DEPARTMENT,

St. Paul Island, Alaska, July 31, 1886.

SIR: I herewith transmit my report of the operations of the sea islands for the past year and up to the close of this sealing season.

* * * * *

Mr. Elliott embraced in his report of 1874 a measurement by him of the breeding rookeries on this island, made July 10 to 18, 1872, since which time no measurement has been made so far as the records of this office show. Deeming it of great importance that the Department should be in possession of the best information as to the present

condition of the rookeries. I made a thorough measurement of all on this island, commencing on the 3d day of May, before the bulls hauled up on the land, when an absolutely correct measurement could be made.

In making my measurements I was assisted by Dr. L. A. Noyes (Captain Loud, assistant Treasury agent, not having returned to the islands) and four of the best-informed natives. As to the boundaries of the breeding rookeries in July, when the rookeries were fullest, we verified our work by observation, and found the ground included within our lines fully covered some of the rookeries, viz, Northeast Point, Tolstoi, Garbutch, Polivana, were densely packed, covering more area than my statement shows, while others were not so closely packed. I do not agree with Mr. Elliott in his assignment of 2 feet square to each seal; at this date it is not enough.

I inclose my statement, marked E, as compared with Mr. Elliott's, which on his basis gives us now on the breeding rookeries 5,148,500 seals, an increase since 1872 of 2,137,550. I think the calculation of 1872, as well as 1886, would stand a reduction of one-fourth in aggregate number of seals, and be nearer the true number than our figures show. Statements at best are merely approximate estimates, but in the absence of any absolutely correct method of arriving at the count, they serve as a guide. Frequent inspection of the rookeries during last season and this shows a decided increase of cows, with an ample supply of bulls. The same report is also made by the assistant Treasury agent in charge of St. George, on which island I was not able to obtain measurements of the rookeries this spring, but will do so next, and forward the result with my next report.

GEO. R. TINGLE, *Treasury Agent.*

E.—Measurement of breeding rookeries, St. Paul Island, Alaska.

Rookery.	By W. H. Elliott, assistant Treasury agent, July 10 to 18, 1872.				By George R. Tingle, Treasury agent, May 3 to 8, 1886.			
	Sea margin.	Width.	Total area.	Total seals, allowing 2 feet square to each female seal.	Sea margin.	Width.	Total area.	Total seals on Elliott's basis.
			<i>Feet.</i>				<i>Feet.</i>	
Reef	4, 016	150	602, 400	301, 200	5, 550	175	971, 250	485, 625
Garbutch	3, 660	100	366, 000	183, 000	2, 750	275	756, 250	378, 125
Zoltoi					700	30	21, 000	10, 500
Keetavia	2, 200	150	330, 000	165, 000	2, 700	140	378, 000	189, 000
Lukannon	2, 270	150	340, 500	170, 250	1, 660	175	280, 000	140, 000
Tolstoi	3, 000	150	450, 000	225, 000	3, 100	250	775, 000	387, 500
Lagoon	750	100	75, 000	37, 500	1, 625	75	121, 875	60, 937
Northeast Point	15, 840	150	2, 376, 000	1, 188, 000	14, 825	205	3, 039, 125	1, 519, 563
Polivana	4, 000	150	600, 000	300, 000	6, 600	175	1, 155, 000	577, 500
North Zapadnie					5, 500	100	550, 000	275, 000
West Zapadnie	5, 880	150	882, 000	441, 000	3, 800	550	2, 090, 000	1, 045, 000
Sea Lion Rock					1, 100	145	159, 500	79, 750
Total	41, 616		6, 021, 900	3, 010, 950	49, 850		10, 297, 000	5, 148, 500
Increase in 14 years					8, 234		4, 275, 100	2, 137, 550

NOTE.—Zapadnie is divided by a sand beach over 700 feet wide at the Southwest Bay landing. In order to show the shape of the rookery better, I call that portion north of the sand beach North Zapadnie and the other side West Zapadnie. Mr. Elliott treats it as one rookery; he also leaves out Sea Lion Rock, which is an old rookery. Zoltoi is new since his date. I think the space assigned to each seal by Mr. Elliott is not large enough, and a reduction of one-fourth from the figures above would give more nearly correct the actual number of seals on the rookeries named.—GEORGE R. TINGLE, Treasury agent, St. Paul Island, Alaska.

(Senate Ex. Doc. No. 7, Forty-ninth Congress, second session.)

[The bogus official report of 1887.]

OFFICE SPECIAL AGENT, TREASURY DEPARTMENT,
St. Paul Island, Alaska, July 31, 1887.

SIR: I have the honor to transmit herewith my report for the year ending July 31, 1887, with the steamers' receipts for 100,000 seal skins.

I have made frequent and close inspections of the rookeries this year, and find the lines of occupancy extended beyond those of last year, and the cows quite as densely packed on the ground on most of the rookeries. While on two rookeries

there is some falling off, it is certain, however, this vast number of animals, so valuable to the Government, are [sic] still on the increase. The condition of all the rookeries could not be better, and the seals undisturbed when ashore, seem to take great comfort out of their season of rest after a long winter's voyage at sea.

GEO. R. TINGLE, *Treasury Agent.*

(Senate Ex. Doc. No. 31, Fiftieth Congress, first session.)

[The bogus official report of 1888.]

OFFICE OF SPECIAL AGENT OF THE TREASURY DEPARTMENT,
St. Paul Island, Alaska, July 31, 1888.

SIR: I have the honor to transmit herewith a report of the operations of the fur-seal islands of Alaska for the year ending July 31, 1888.

The breeding rookeries were later filling this year than for several years past. I may say that fully three-fourths of the cows and bulls were ten days later hauling out than usual, which at the time gave the impression there would be a shortage this season of killable seals, as well as breeders.

I am happy to be able to report that although late landing, the breeding rookeries are filled out to the lines of measurement heretofore made, and some of them much beyond those lines, showing conclusively that seal life is not being depleted, but is fully up to the estimates given in my report of 1887.

GEO. R. TINGLE, *Treasury Agent.*

(Senate Ex. Doc. No. 90, Fiftieth Congress, second session.)

[Treasury agent's journal, St. George Island (pp. 12, 13).]

June 15, 1887.—The following was received on the 13th:

*"Measurement of rookeries by Dr. Noyes, acting assistant Treasury agent, St. George Island, January 4, March 1, and April 22, 1887."*¹

Rookery.	Sea margin.	Width.	Square feet.	Seals.
East.....	2,200	200	440,000	220,000
Zapadnié.....	2,100	160	336,000	168,000
Little East.....	600	125	75,000	37,500
Starry Arctel.....	900	575	517,000	258,750
Near North.....	3,500	300	1,050,000	525,000
Total.....	9,300		2,418,500	1,209,250

"The measurement of the above rookeries by H. W. Elliott July 12-15, 1873, gives as the total of males, females, and young seals on the breeding rookeries, 163,420, while the company killed 25,000 seals on St. George, or one-fourth of the catch.

"The same officer gives the number of breeding seals on St. Paul Island July 10 to 18, at 3,030,250, or twenty times the number on St. George, and yet only three times the number of seals were taken on St. Paul. It is evident that Mr. Elliott's measurements of St. George rookeries were not correct, or the company could not have taken 25,000 from so small a showing.

¹ With reference to this official entry in the St. George journal, the following note from my journal should be transcribed in simple justice to Dr. Noyes:

VILLAGE OF ST. GEORGE, *July 25, 1890.*

Dr. L. A. Noyes, who made [the measurements of the rookeries of St. George Island in 1887, long before a breeding seal had made its appearance upon them, and who sent them over to St. Paul to George R. Tingle, who in turn under date of June 10, 1887, orders them spread upon the record as "absolutely correct" (neither man had ever seen, up to that hour, the rookeries when covered with breeding seals as specified in these measurements aforesaid), this day personally entered a disclaimer to me as to any responsibility for these estimates of the numbers of seals on the St. George rookeries, which Tingle declares "absolutely correct." He said to me that he did not know anything about surveying; that he made those measurements of space in length and depth at Mr. Tingle's request, and sent them over without making any estimates of the number of seals that might be within the lines of his measurements. That estimate of 1,209,250 seals on the St. George rookeries in 1887 was made wholly outside of his knowledge or suggestion.

"The very careful and correct measurements by Dr. Noyes shows the true condition of the rookeries, and is in proportion to the St. Paul Island seal population as follows:

Island.	Sea margin.	Square feet.	Seals.
St. Paul	49,850	10,297,000	5,148,500
St. George.	9,300	2,418,500	1,209,250

"St. Paul quota (sic) 85,000, St. George quota (sic) 15,000. To equalize the income of the natives on the two islands, the company allows the St. George men to assist on the St. Paul Island, where they earn about 3,000 each year—equal to taking 7,500 additional seals on St. George as far as the St. George natives' income is concerned."

Please enter the foregoing in your journal for future reference.

I am, respectfully,

GEO. R. TINGLE, *Treasury Agent.*

ST. PAUL ISLAND, *June 10, 1887.*

OFFICIAL NOTES ON THE SEALS AND THE DRIVING.

[Extracted from the Treasury agent's journal, St. George Island.]

Saturday, June 30, 1877.— * * * The month has been rather dry for killing seal, but yet a large number has been killed, a much larger number than has been taken in June in any previous year since the island has been in the hands of the Alaska Commercial Company. The number taken this month is 9,987, lacking only 13 of being as many as was taken in the whole season of 1876. The highest number ever taken in June was 8,343 in 1872. The number taken in June last year was 3,397. The first drive last year, June, was 108. The first drive this year was made June 1, and numbered 198. This drive of 198 has been equaled only once; that was in 1873, when 198 were driven, June 4. It will be seen by the above comparisons that there was an increase of seals the 1st of June, which continued throughout the month. During this month there has been but one drive from Zapadnie, on account of the prevailing dry weather. At this date there are at least 5,000 seals on that rookery large enough to kill. The last drive this month was made from East rookery, numbering 1,589, and several hundred were left on hauling grounds.

After conferring with Mr. Morgan, the company's agent, and the chief of this island, I am convinced that there is a large increase of all classes of seal this year over last year for the month of June. But whether this increase will continue to the end of the hauling season remains to be seen.—J. H. MOULTON, *Assistant in Charge.*

Tuesday, July 10, 1877.— * * * The natives made a drive of 880 seals from East rookery. This is the last drive for the season of 1877, making 14 drives in all, numbering 15,000 seals altogether. The number allowed by law to be taken from this island this season was 15,000. It is hoped that the Alaska Commercial Company will decide to take 17,000 the next season, in order that the natives may get out of debt.—J. H. MOULTON (p. 115).

Sunday, July 15, 1877.— * * * Mr. Morgan, company agent, the chief, and myself visited Zapadnie rookery to make a careful examination of its condition; and, after a careful examination, came to the conclusion that there is an increase of all classes of seals over last year of 33½ per cent. The chief informs me that there are more seals on all the rookeries than in any former year. * * * —J. H. MOULTON.

Tuesday, June 28, 1881.— * * * The drive to-day numbered about 1,600, an unusual number of 1 and 2 year olds, too small to kill. This has been the case with almost every drive thus far this season. Drive for East rookery: Seals killed, 746; skins accepted, 744; rejected, 2.—W. B. TAYLOR (p. 260).

July 16, 1881.—This makes a grand total of 20,000, the full quota for 1881; skins all salted to-day.—W. B. TAYLOR (p. 265).

June 14, 1882.—An examination of all the rookeries on the north side this afternoon demonstrates that there were not more than 400 or 500 holluschickie hauled out, which was not considered enough to make a drive desirable. Considerable numbers of holluschickie haul out under the cliffs of North and East rookeries, from which places they are driven out with a view to forcing them to other localities where they may be available for driving to the killing grounds.—G. H. WARDMAN (p. 290).

June 21, 1882.—As the holluschickie have taken to hauling in considerable numbers under the cliffs of East and North rookeries, from which they can not be obtained for killing, small flags saturated with kerosene were to-day set among the rocks at those places with a view to frightening the seals to other grounds. On the men visiting the flagged places a short time afterwards, the seals were found sleeping between the flags. They do not scare.—G. H. WARDMAN (p. 291).

June 30, 1882.—The prevailing character of the June weather this year was light and dry. There was more or less fog on 27 days, but generally it was very light, and frequently modified by sunshine.—G. H. WARDMAN (p. 291).

June 30, 1883.— * * * The month of June has been very unfavorable for sealing this year, only 2,674 skins having been taken in that time. This number might have been increased at Zapadnië by killing the seals there, numbering some 2,000 or more, which were held as a reserve to draw upon in case the quota, 15,000, should not be available on the north side of the island. The number might also have been enlarged this month had the Alaska Commercial Company not determined to take larger skins in the aggregate than heretofore of late years. An effort is now made not to kill seals the skins of which will not weigh 8 pounds at least.—G. H. WARDMAN (p. 327).

June 23, 1883.—On East rookery and Starry Arteel the gradual increase in the number of females and pups is easily seen day by day, but the accessions to the holluschak party are not so apparent.—G. H. WARDMAN (p. 326).

July 19, 1882.—The year's quota of 20,000 was filled to-day.—G. H. WARDMAN (p. 293).

THE FIRST NOTE OF WARNING FROM ST. GEORGE.

[Treasury agent's journal (p. 331).]

Standard, nothing less than an 8-pound skin.

July 27, 1883.— * * * Skins from Starry Arteel, North, and East rookeries, 606, out of a drove of about 6,000 seals.

Having those 6,000 seals on hand at the village from the drive yesterday afternoon, the writer of this set out at 7 o'clock this morning to view the hauling grounds from East to Little East rookeries. There were then in sight about 1,500 holluschek (sic) which had hauled out yesterday afternoon and last night. Allowing as many holluschek (sic) to be in the water along the beach as were hauled out, and supposing as many along Starry Arteel and North as East, we should have 12,000 on the north side of the island. Judging from the killing at Zapadnië this year, there should be at least 6,000 over there. Call it 8,000, and we have all we can claim—20,000 holluschek (sic) about the island, of which at least one-half are yearlings, which, if all return, will be too small for market next year. If all of the holluschek (sic) which we believe to be about the island return, we may be able to fill a quota next year of 10,000. *It now appears that more than 10,000 could not safely be demanded of St. George for 1884.*—G. H. WARDMAN.

SECOND NOTE OF WARNING FROM ST. GEORGE.

[Treasury agent's journal (p. 338).]

September 7, 1883.—At East rookery, while there are seals scattered all along from Little East to the main East rookery, *it does not seem that there are so many as in 1881.* But there may be more in the water, as the long-continued southerly wind makes small surf.

September 14, 1883.—Heavy surf on north shore, sending nearly every seal to land. From a careful examination of Little East to-day, am satisfied that there are not so many seals there as two years ago; would not estimate present number at above 8,000 of all kinds, including pups. Assistant Agent McIntyre estimates 12,356 there in 1874. Elliott's estimate was 13,000 in 1873.—G. H. WARDMAN.

September 16, 1883.— * * * Most of seals being ashore in consequence of heavy surf, a careful view of North and Near rookeries was made to-day. In 1874 Assistant Agent McIntyre estimated the number of seals there at 86,562. The writer would consider that an extreme outside figure for the seals there now.

September 25, 1883.— * * * At East rookery, seems not so many seals there now as a month later in 1881. * * * —G. H. WARDMAN.

September 5, 1884.—Walked along the cliffs and beaches to Little East and East rookeries. After careful examination, estimate number of seals of all kinds at Little East 12,000, and East 23,000. Scattered along the beach between rookeries, 100; under the cliffs beyond East, 500. At East rookery there were about 800 sea lions. On account of the surf, most every seal was on shore.—G. H. WARDMAN (p. 374).

September 8, 1884.— * * * At North and Starry Arteel rookeries: After careful examination, estimate number of seals of all kinds at North 75,000, and at Starry Arteel 40,000; under the cliffs beyond North about 500. The heavy surf of the past week has driven and kept ashore almost every seal. Many of them were hauled way back on the grass.—G. H. WARDMAN (p. 375).

September 2, 1885.—Walked to North rookery to-day. Was surprised at not finding the great numbers of seals on the rookery that has been recorded as seen by other

¹ On July 30 the quota of 15,000 big skins was all taken, save 473 skins still to be taken.—WARDMAN.

agents in other years. So far, from observations made, I think someone has greatly overestimated the number of seals on the rookeries at any time.

Elliott, I think, comes nearer the number than any of his successors.—T. F. RYAN (p. 427).

July 26, 1886.—With all due respect for the work, measurements, and conclusions of Messrs. Elliott and McIntyre, I am forced, from close observation and tests made on the work of both, to the following conclusions:

First. That Mr. Elliott's measurements are much nearer the mark than Mr. McIntyre's, and he (sic) is at least 1,000 feet of shore-line rookery by 50 feet in width too much.

Second. That Mr. Elliott's opinion that 2 feet square of ground for each seal or 4 feet square for cow and pup, even taking into consideration the topography of the ground, is none too liberal. The lay of cows and pups at birth are very close.—T. F. RYAN.

June 21, 1886.— * * * The rookeries upon this island are looking finely and are showing many bulls, cows, and pups. The seals are coming unexceptionably fine and plenty for killing. The Alaska Commercial Company have already taken 1,000 more than they took one year ago this time, being about 5,000 to date.—J. P. MANCHESTER (p. 470).

June 26, 1886.— * * * The seals for the past week have been coming in very slow; expect them to do better soon.—J. P. MANCHESTER (p. 472).

July 6, 1886 (Monday).— * * * We are now 23 skins behind last season. The seals are coming a little slow.—J. P. MANCHESTER (p. 475).

July 7, 1886.— * * * The seals come very slow; hope they will do better soon.—J. P. MANCHESTER (p. 477).

July 15, 1886.— * * * Mr. Ryan measured Little East rookery, in company with the chief, and called it 350 by 40 feet, well covered with cows and pups, and appeared quiet and happy, with big showing of pups. He estimates 7,000 cows and pups.—J. P. MANCHESTER.

July 22, 1886.—Counted in 527 skins killed yesterday. The company wants 294 more to fill their quota of 15,000. * * * —J. P. MANCHESTER.

July 23, 1886.—To-day the Alaska Commercial Company took 294 seals. * * * —J. P. MANCHESTER.

July 1, 1887.— * * * Counted into salt house 100 skins, result of yesterday's drive from Starry Arteel and North rookeries. This, I suppose, is the smallest drive ever made upon these islands, and is discouraging. The seals are late, and the constant driving of them, which stirs up the rookeries, does them no good. * * * —WILLIAM GARITT (p. 18).

Tuesday, June 22, 1888.— * * * We think from the outlook under the next lease the Government will get a revenue of not less than \$500,000 a year from the seal off St. Paul and St. George islands. We think 150,000 can be taken each year instead of 100,000, especially if the Government will commence at once and give them good protection. The crop of seal are (sic) big upon these islands, "the largest and best in the world."—J. P. MANCHESTER (p. 471).¹

St. George, September 25, 1888.— * * * Made an examination of all the rookeries on the north side. Estimate about 2,000 killable seals.—A. P. LOUD (p. 187).

St. George, July 10, 1889.— * * * It is feared by Mr. Clark, of the Alaska Commercial Company, that we can not get our quota of skins this year. The seals are coming in very slowly.—JOSEPH MURRAY.

With that entry of Colonel Murray of the 10th of July, 1889, I close the St. George official extracts: and, turning to the official entries on the

¹ This exhibition of total misunderstanding of the real and threatening condition of the fur-seal herd, deliberately placed at this hour in the official journal, was undoubtedly the honest belief of Mr. Manchester at the day he made the entry quoted. This particular officer was a gentleman in every sense of the word. He was never engaged or concerned in petty, bitter personalities while upon these islands: but, he was a very large, fleshy man, and not able to walk on tours of rookery and hauling-ground inspection, and was thus obliged more or less to form his idea of what the real condition of the hauling grounds and rookeries was from the statements of others in whom he trusted. He undoubtedly gained his opinion from the official reports of his superior officer, Chief Special Agent George R. Tingle. The Treasury agents on the seal islands should not only be mentally fitted for the discharge of their duties, but they should also possess an athletic physique, with capacity and disposition for untiring pedestrianism over rough, wet ground. Unless they are so endowed, they can not properly view and truthfully record the condition of the hauling and breeding fur seals from week to week during the season. Unless they can do, and do this work, they are of no good service or value; their appointment is an imposition on the Government, in so far as the seal islands are concerned.

pages of the St. Paul journal, *I find nothing there of the character cited from the St. George records, i. e., direct entries made from field observation like those quoted above, until I reach the record of last year.* They are summed up in the following direct, significant warning, which that gentleman (who uttered it) promptly embodied in his report to the Treasury Department, thus giving the first direct information on file in the secretary's office which warned him of the true state of affairs up there.

September 1, 1889.— * * * Dr. Lutz and myself took a walk to the Reef this afternoon. The old bulls are about all gone, pups are getting rather large, and could be seen by thousands playing in the water. Yet I am satisfied that they are not near so numerous as in the past. It is impossible to continue killing 100,000 seals per annum and expect a continuation of seal life and a revenue to the Government. My observation this summer of the rookeries have fallen far short of my expectations after reading Elliott and others on seal life.—C. J. GOFF. (Treasury agent's journal, St. Paul Island, p. 173.)

FIELD NOTES RELATIVE TO PELAGIC SEALING—IN RE SEAL PIRATES,
AND MINGLING OF RUSSIAN AND AMERICAN SEAL HERDS.

OONALASHKA, August 13, 1890.

From what I saw yesterday as I came down on the *Arago*, from what Captain Tanner of the *Albatross* informs me, and from what I learned through the collector here, there is no doubt but that a number of pelagic sealers are at work in Bering Sea at the present hour: and getting everything that they can lay their hands upon in the form of fur seal.

We ran down upon a typical sealing schooner yesterday morning, about 7 o'clock, as she was partly becalmed, about 60 miles north of Akootan Pass. She had her sails at first clewed up: but, as we drew near, she hoisted her foresail and jib and lazily drew off so as to turn her stern away from sight, in order that her name might not be taken. But, we ran clear around so as to disclose the name "*Ariel*, St. John, N. B.," in white letters on her black hull, under her stern. We passed so near to her that we could look right down upon her crowded deck—crowded with northwest-coast canoes and Indians, so that there was hardly moving room on her.

She was a small schooner, not over 50 tons, and extremely shabby in her equipment: rigging frayed and slack, sails patched like a crazy quilt, and the crew made up entirely of Indians (some thirty or thirty-five), except three white men. The Indians were dressed in blanket coats or shirts, with their flaps overhanging; some breeched and some unbreeched. Their canoes were telescoped on deck precisely as the dories of a Gloucester codfisherman are packed or stowed.

They all crowded up on the diminutive poop deck of the schooner, and stared at us in mingled fear and wrath, while some one of the white men ran below, and reappeared with a rifle under his arm.

The name of the schooner being disclosed, the *Arago* bore away, and when the craft was some 5 miles astern, we saw her canoes dropping down for seals—she had 8 or 10 canoes. I am not certain as to the count, but not any less, that is sure. These Indians use both spears and guns.

Captain Tanner says that last week when at work, 60 miles west-northwest of St. Paul Island, on the 100-fathom line, he saw two schooners anchored, with their boats out sealing. The skinned carcasses of the seals that they had shot, were floating everywhere.

The collector here says that he has been informed by these men who have been running in here frequently during the last three weeks, ostensibly in distress, but really to find out where and what the cutters were

and doing, that the catch outside of Bering Sea up to July 1 was 47,000 skins. These skins were shipped on a special Victoria steamer by the sealers at a common rendezvous at Sand Point, and at Thin Point, or Sannak Island, before they ventured into Bering Sea. This is an enormous catch, and must have been wholly taken from the cows, since there are little or no male seals left. The collector says that out of the 67 skins which he seized, the sealers informed him that 60 were females when killed, *all being with their unborn young!*

Certainly, the absence of seals in the water as we came down yesterday, over a sea that was smooth and glassy, was surprising. We saw but four young seals on the entire stretch between Oonalashka and the island of St. George. The opportunity for viewing these animals never could be better, and the inference is unavoidable that they are rapidly running out.

I find the opinion commonly expressed here, as it was when I first came up, that the active, uninterrupted shooting and hunting of these seals on the several paths of travel up to the seal islands from the Pacific on one side, has deflected large bodies of them over to the Russian rookeries. It stands to reason that a fleet of forty or forty-five or more vessels, all hovering about the entrances to the passes of the Aleutian chain on the Pacific side—the passes of Oonimak, Akootan, and Oonimak especially—that such a reception would head off and turn aside a regular, orderly migration of these animals. How many of them are thus turned over to the Russian herds, which really belong to us, I have no idea; who can say? But at this present hour every seal lost to the rookeries of the Pribilof group counts heavily against the future life and preservation of those interests.

Touching this matter of the commingling of the two herds, I can not think of a better illustration of the fact that they do not visit back and forth on the islands—do not interchange on the islands—than the following: Farmer A has a large number of chickens, white Leghorns, which he breeds in his barnyard year after year, with great success. Farmer B, who lives up and beyond, across the country road from Farmer A, also has a fine flock of these same white Leghorn fowls, which he, too, breeds with great success and profit, and has done so for a long time.

Now, during the summer months, a number of these chickens reared by Farmer A regularly range out into the country road, up and down, in search of food, and, in so doing, meet and scratch together with the fowls of Farmer B, which come also out into the roadway in obedience to the same instinct. Anybody seeing them together on this common meeting ground, could not possibly tell them apart as the special property alone of Farmer A or B.

But, the chickens never make a mistake; they invariably separate and return every evening to their respective barnyards, where they were hatched and reared.

So it is with these fur seals of the Russian and Alaskan herds in Bering Sea. I believe that they, like the fowls above described, meet each other frequently when feeding throughout the waters of Bering Sea, that roll between the Asiatic and American seal islands of their birth; but that they always return, when desirous of hauling out on land, to the rookeries on which they were born; the Russian fur seals always returning to the Commander Islands, and the Alaskan *callorhini* always returning to the Pribilofs.

Abnormal conditions might change this fixed habit of their lives; as far as I know to-day, no such conditions have prevailed.

Captain Tanner has been cruising in Bering Sea, between Oonalashka and Bristol Bay, and as far to the westward as longitude 175° west, latitude 59° north, and has seen but three schooners up to date. Two of those vessels were in the full tide of sealing, as above stated, 60 miles west of St. Paul Island, and the other was a rusty little craft just above Amak Island, west of Oonimak Island. But that does not signify that there are no more—on the contrary, it is very likely that there are more.

A careful inquiry here to-day, discloses the fact that fur seals have never hauled on the beaches of Oonalashka Island: and have never come into the harbor here, within sight of the natives, except for a few days only: when strong northerly gales prevail: and, as soon as it becomes calm, they go out again and down into the Pacific. From time immemorial, fur seal pups have been shot and speared every fall, in November chiefly, as they migrated south into the Pacific from Bering Sea. Anywhere from a few hundred to 2,500 annually have thus been secured since the Russians first opened up the country in 1768–1786. The best resort for such hunting is Oomnak Pass; it was in the past, and is now. It was this annual passage of these animals, down in the autumn and up in the summer, through these passes of the Aleutian Archipelago, that aroused the first search of the Russians for the seal islands.

The scarcity of seals this year has been commented upon by the fishermen of Alaska, who declare that they have been getting larger catches this season than ever before, and lay the change to the decrease of seal life. Captain Tanner says that he has seen several of these men who have charge of canneries and codfishing stations at Oonga and Popov islands; they all said that unquestionably the increase of fish was due to the decrease of seals; if not wholly due to that, it certainly was in a measure. I am by no means inclined to regard the circumstance as noteworthy to any appreciable degree whatever; nor can I believe much in the deflection of any large body of fur seals from the Aleutian passes up to our side of Bering Sea and the Pribilof Islands. There is not as yet enough ground covered by these sea hunters to make that abrupt turn down south of the Aleutian chain of the fur-seal herd, wherein too long, too wide, and too frequent an opportunity exists for them to go wholly unmolested up to their places of birth in Bering Sea. They might be so headed off by a cordon of hundreds of schooners hovering steadily in the mouths of these passes, with the wind and weather always clear and calm, still water, and foggy only at short intervals: but such is not the case here; the weather is treacherous, the winds rise and blow for days and days; the fog settles and hangs for weeks and weeks so thick that the oldest and most experienced seamen actually get lost in its confusion. During these periods, the fur seals can and do pass safely through into Bering Sea, no matter how many schooners, filled with no matter how many hunters, may be in the waters outside waiting to intercept them.

Then, when it does clear up, becomes calm, and the horizon is visible in every direction, these pelagic hunters can and do work rapidly and successfully during the brief intervals which such weather affords; brief, I say, because the clear, calm, bright day off the Aleutian chain and in its passes, is a rare one, and is easily remembered during each season. Therefore, I do not feel warranted in believing that as yet, any deflection by hunting in the open waters of the ocean has been made to or in that path of migration regularly pursued by the fur seal.

I think that such a deflection might be caused by the withdrawal of large schools of food-fish supply from the Aleutian Bering Sea region—by its abandonment of this region and location in the Occident—such

a course would be quite sufficient, since the seal is a hearty feeder and would follow its source of food supply. But fish are now more abundant, if anything, than ever thus far in the waters of the Alaskan Coast, and the seals have no cause on that score to deviate from their regular route of travel.

LOSS OF SEALS BY PELAGIC HUNTERS.

Witnesses under oath before the House Committee on Merchant Marine and Fisheries, Fiftieth Congress, second session, report No. 3883.

T. F. Morgan (p. 64). Q. What number of seals are recovered that are killed in the waters?—A. I could not state it as a positive fact, but I should say not over 50 per cent.

W. B. Taylor (p. 54). Q. When they kill the seals in the water, about what proportion of them do they recover?—A. I do not believe more than one-fourth of them.

C. A. Williams (p. 87). Q. And the conditions are as bad?—A. Yes, sir; and often worse, for this reason: If you kill a pup you destroy a single life, but in killing a cow you not only destroy the life that may be, but the source from which life comes hereafter, and when they are killed there in the water by a shotgun or spear, the proportion saved by the hunters is probably not one in seven. That was their own estimate, that out of eight shots they would save one seal and seven were lost. If they were killed on the land, those seven would go toward filling up their score.

H. H. McIntyre (p. 118). Q. What proportion of the seals shot in the water are recovered and the skins taken to market?—A. I think not more than one-fifth of those shot are recovered. Many are badly wounded and escape. We find every year, embedded in blubber of animals killed upon the islands, large quantities of bullets, shot, and buckshot. Last year my men brought to me as much as a double handful of lead found by them embedded in this way.

George R. Tingle (p. 164). Q. The waste of seal life was only 53 in 1887?—A. Yes, sir; in securing 100,000 skins, while these marauders did not kill, last year, less than 500,000. The logs of marauding schooners have fallen into my hands, and they have convinced me that they do not secure more than one seal out of every ten that they mortally wound and kill, for the reason that the seals sink very quickly in the water. Allowing one out of ten, there would be 300,000 that they would kill in getting 30,000 skins. Two hundred thousand of those killed would be females having 200,000 pups on shore. Those pups would die by reason of the death of their mothers, which, added to the 300,000, makes half a million destroyed. I am inclined to think, because the seals show they are not increasing, or rather that they are at a standstill, that more than 300,000 are killed by marauders.

T. F. Ryan (p. 220.) The number of seals taken by marauders from seal islands, or in the waters nearby, are very few in comparison to the great numbers taken in the 50 or 60 miles south of the islands. Old seal hunters seldom bother the islands, and from the information to be had, 95 per cent of seals taken by seal hunters in Bering Sea are taken at a distance of from 40 to 75 miles south of St. George Island, and 90 per cent of those taken are cows, the producers.

Capt. L. G. Shepard (p. 237). Q. It has been stated in testimony here that not one out of five, six, or seven of the seals wounded in the water are recovered. I think you put the estimate a little lower than that. Have you any knowledge on the subject?—A. I think they recover about one-half.

Capt. C. A. Abbey (p. 246). Q. What was your opinion about that?—A. In the earlier days they shot them with bullets and with rifles, and when they are shot with a bullet the seal sinks, and probably out of half a dozen they would not get more than one. If the seals are not killed, but simply wounded, that leaves a chance to get them into a boat. They were very expert hunters who hired for that purpose, but I judge that they killed about three for every one they got. I got that from the conversation with the hunters themselves.

J. C. Redpath (p. 316). Q. And if they wound a seal in the water, the seal is likely to sink before they can recover it?—A. There is no doubt about that.

Q. What proportion do they recover of those that are killed by firearms in the water?—A. Very few, I should suppose. I have never seen a seal shot in the water. I have known of sea lions that if wounded in the water could be recovered, but if shot and killed they will sink.

Q. In your judgment, what proportion of seals that are shot in the water are recovered?—A. It is hardly possible to recover one-half of them.

H. H. McIntyre (p. 332) submitted the following extracts from the log of the schooner *Angel Dolly*, kept by Capt. Alfred N. Tullis, who was accidentally killed by his own hand on the 28th of July, 1887, near Otter Island:

July 4, 1887.—Hove to 30 miles southwest of St. George Island. At 1.30 out boats. Got 5 seals.

July 5, 1887.—Out boats at 6.30 a. m. Returned at 11.15 p. m. with 11 seals, one boat getting 6.

July 9, 1887.—I am now on the hunting ground, but keep sail on the vessel as we may pick up a sleeping seal.

July 11, 1887.—Caught 7 seals.

July 13, 1887.—Caught 12 seals; they were around the vessel as thick as bees (the seal). Had it been clear we would have caught 100 easy.

July 16, 1887.—Saw 3 sleeping seals from the vessel. Got boat over and got them. I have not seen the sun for nine days, therefore I have had no observations, yet I know that I am not over 14 miles from St. George Island.

July 17, 1887.—Out boats at 10.30 a. m. The seals were around the vessel in hundreds. The boats would not go any distance from the vessel. Had they gone away they could have caught 200 or 300 seals. They were afraid of the fog, yet I told them that it would clear up, which it did at 3.30 p. m., and continued thus all the rest of the day. They are the hardest set of hunters that were ever in Bering Sea, who caught 20 seals and used 250 rounds of ammunition. They get 1 out of every 10 they fire at. Well, I will never be caught with such a crowd again. The head hunter fired 100 shells and got 6 seals. The vessel is lying between the islands of St. Paul and St. George. Just as soon as the fog clears off the land I will have to move, as I might have the cutter after me. I came here to get a load of seals, and by God, if I had any men with me, I would get them, too. They are all a set of curs, genuine ones, too.

July 21, 1887.—Out boats at 6.30 a. m., coming back to vessel at 9 p. m. One boat returned at 7 p. m. This was the head hunter. He is out last and first back always. Caught 30 seals; one boat got 14. This is the best day's work we have done yet. From the amount of growling among the boat pullers I conclude that they fired at and missed nearly 200 seals. They had 100 loaded shells each when they left the ship, and when they came back all were emptied, so they did some tall firing.

July 23, 1887.—To-day I asked Daniel McCue, boat puller for Charles Loderstrom, how it was that his boat got only 9 seals. I told him that I had seen 40 sleeping seals from the vessel, and that he must have seen more as he was pulling about. His answer was that if he had a man that knew how to shoot, that the boat could not carry all the seals that were missed. "Why, Captain," said he, "it is enough to discourage a man. You pull up to a sleeping seal to within 10 feet, fire at him and see the shot go 6 feet the other side of him." I then asked J. Linquist, puller for boat two. He said: "Captain, don't ask me how many we have seen, but ask me how many we missed, and I will tell you." I asked him the above question; he said 100. I now asked Joe Spooner the same questions as above; his answer was, "We only want hunters, and we would be going home now with 1,500 skins at the very least."

July 24, 1887.—As fine a day as was ever seen in San Francisco. A flat calm with the sea smooth as glass. Got out the boats at 6.30 p. m., coming back at 7.30 with 14 seals. Why, one boat with an ordinary hunter could get that many without going 100 yards from the ship. I killed 2 inside of ten minutes, and it was then nearly dark.

July 25, 1887.—Nice weather. Out boats at 7 p. m. Came back with 4 seals. Big catch.

July 26, 1887.—There were thousands of seals around the vessel. I shot and killed 7 from the vessel, but only got 1, through the tardiness of the hunters. At 4.30 I put the boats out; came back at 7.30 with 1 seal. The water was fairly covered with seals, yet they only caught 1.

The log closes on the 28th of July, 1887, on which day the captain was killed and his vessel seized for violation of the revenue laws.

His signals were: (1) Come back to the vessel; (2) want a boat for dead seal; (3) keep near the vessel; bad weather or fog; (4) cutter in sight.

This paper is a transcript of the log book of the schooner *Angel Dolly*, captured by Mr. Tingle in July, 1887.

I introduce this sworn evidence, above quoted, because it may be the honest, and doubtless is the honest understanding of these gentlemen: But, as for myself, I do not believe that they, or any man knows how many seals he kills, injures slightly or fatally, or misses outright, after the close of a day's hunting on the water: *he can not know*; for each and every seal that he fires at, *is going to instantly disappear*; and he only gets those seals that he kills outright, or dazes or stuns: *the others, not hit, or wounded fatally or slightly, all dive instantly and speed away from his retrieving!*

NUMBER OF SEALS.

Fitnesses under oath before the House Committee on Merchant Marine and Fisheries, Fifth Congress, second session, Report No. 3883.

1885-1887.

T. F. Ryan (p. 211). Q. Will you state about the location of these islands and the condition of the seal rookeries while you were there?—A. St. George Island is in Bering Sea, 180 miles to the northwest of Unalaska, one of the Aleutian chain of islands. It is an island about 6 miles wide and 10 miles long, to which 175,000 to 200,000 seals annually—male, female, and pup—resort.

1885-1888.

G. R. Tingle (p. 162 et seq.). Q. What is your observation as to the number of seals resorting to the islands annually: are they diminishing or increasing?—A. Upon that subject, if it is in order, I would like to answer the question by reading from my report to the Treasury. May I inquire if it is in Mr. Elliott's evidence that he made his statements as to the seal life upon the islands from personal observation?

The CHAIRMAN. Yes; and estimates.

The WITNESS. Was it shown that Mr. Elliott had not been on the fur-seal islands for fourteen years?

The CHAIRMAN. His evidence was that he was last there in 1876, twelve years ago.

The WITNESS. He made a statement that there was no greater number of seals upon the islands now than at the time he measured the rookeries. Since I have been on the islands I have observed very closely the breeding rookeries. I have visited them daily, remaining around and observing them for hours at a time. I gave them very close attention. The reason I did so was that I desired to be able to place the Department in possession of the very best information I could in regard to this seal property, whether it was increasing or diminishing. I found on the islands this book of Mr. Elliott's, giving his measurements of the seal rookeries, and I conceived the idea of making some measurements myself on the Elliott basis, to find out if the seals were increasing. Mr. Elliott's measurements of the fur-seal islands showed an area of 6,021,900 square feet, and he says that upon that basis there are 3,010,950 seals. Taking Mr. Elliott's basis, I made measurements fourteen years after his, and they showed an increase of 8,234 feet in sea margins of the rookeries, and an increase of 4,275,100 feet of superficial area occupied by breeding seals, showing upon St. Paul Island, at the time I made my measurement, 5,148,500 seals, or an increase of 2,137,500. The number of seals at present shown to be on the breeding rookeries of the two islands is as follows:

St. Paul Island.....	5, 148, 500
St. George Island	1, 209, 250
Total	6, 357, 750

1883.

W. B. Taylor (p. 59): Q. Is it your opinion that a larger number of seals may be taken annually without detriment to the rookeries?—A. No, sir; I would not recommend that. The time may come, but I think that one year with another they are taking all they ought to take, for this reason: I believe that the capacity of the bull seal is limited, the same as any other animal, and I have very frequently counted from 30 to 35, and even at one time 42 cows with one bull. I think if there were more bulls there would be less cows to one bull, and in that way the increase would be greater than now. While the number of seals in the aggregate is not apparently diminished, and in fact there is undoubtedly an increase, yet if you take any greater number of seals than is taken now this ratio of cows to one bull would be greater, and for that reason there would be a less number of young seals, undoubtedly. I look upon the breeding of the seal as something like the breeding of any other animal, and that the same care and restriction and judgment should be exercised in this breeding.

1876-1880.

George Wardman (p. 39): Q. What is your impression of the number of seals that visit these rookeries annually?—A. I never could make it so much as Professor Elliott has done. I made many estimates. I have been to all the rookeries on these

islands many times, and compared them with the space occupied by the carcasses on the killing ground, and I feel pretty confident that the total number has been overestimated.

Q. He estimated it at something less than 4,000,000 on the two islands.—A. I think he estimates 250,000 to 275,000 on St. George. I have figured it out in several ways, and I think the 20,000 that we killed would be 10 per cent of the killable seals.

Q. Is that your estimate—10 per cent of all that come?—A. I take that for one thing. I take our killing ground, where we kill 20,000, and where we lay these seals along as close as we can, so as to give us greater area. We want to make room to take the next year another piece, so that by the third year we can get back again. I measured off that space two or three different times where 20,000 carcasses lay, and where I considered they lay as close as on the rookeries. I came to the conclusion we had about 40,000 at Zapadnië, 30,000 at Starry Arteel, and about 50,000 at North rookery, 10,000 to 15,000 on Little East rookery, and about 25,000 or 30,000 on East rookery. That is all the rookeries. I could never make it any more than that during that time. I measured the places carefully.¹

Q. Do you put it at the same numbers annually?—A. About. I think the breeding seals on the rookeries come in about the same numbers; but the first year I was up there we killed 20,000 with great ease, and in a short time, and I considered that we could kill more easily; and I recommended Colonel Otis to make a bigger allowance for St. George, because we wanted to bring up our men's dividends a little. The next year he gave permission to take 25,000 on St. George, and they would take 75,000 on St. Paul. We got 21,000 or 22,000 that year. We had exceeded in our estimate the number that we could take at that time, and they had to finish our quota on the other island. Later in the season—perhaps two weeks after that—we could have got perhaps 10,000 more seals, but we certainly could not get them when we wanted them.

1887.

L. A. Noyes, per G. R. Tingle (p. 177). Measurements of breeding rookeries of St. George Island, by Dr. L. A. Noyes, acting assistant Treasury agent, January 4, March 1, and April 22, 1887.

Rookery.	Sea margin.	Depth.	Square feet.	Seals.
East.....	2,200	200	440,000	220,000
Zapadnië.....	2,100	160	336,000	168,000
Little Eastern.....	600	125	75,000	37,500
Starry Arteel.....	900	575	517,500	258,750
Near and North.....	3,500	300	1,050,000	525,000
Total.....	9,300	.....	2,418,500	1,209,250

The breeding grounds on St. George Island, surveyed July 12 and 15, 1873, gave the following figures (H. W. Elliott's "Condition of Affairs in Alaska, 1874," p. 78):

Rookery.	Sea margin.	Depth.	Square feet.	Seals.
Eastern.....	900	60	54,000	27,000
Little Eastern.....	750	40	30,000	15,000
North.....	2,000	25	50,000	25,000
Near.....	750	150	112,500	56,250
Starry Arteel.....	500	125	62,500	31,250
Zapadnië.....	600	60	36,000	18,000
Total.....	5,500	.....	345,000	172,500

1868-1888.

T. F. Morgan (p. 69). Q. Have you ever formed an estimate of the probable number of seals that visit the rookeries annually?—A. I have attempted to do it, but it is hard to do.

¹ Here he gives his figures, and after telling the committee that he can not make as many seals in counting as "Professor Elliott has done," yet he does do so, and more! His total for the St. George rookeries, as given by him, is 185,000 seals, against my sum total of 172,000.

Q. You are aware that Professor Elliott, in his book, estimates in the neighborhood of 4,000,000. What do you think about that estimate?—A. I think that Professor Elliott has overestimated it. When he was there the way he figured out the estimate was that he laid down the carcasses of seals and measured around them and then measured the rookeries.

Q. He estimated the average size of a harem?—A. Not only a harem, but every size of seal, each old bull. He measured the 4-year old, and the 3-year old, the 2-year old, and the 1-year old grown male, and then he took the extent of territory where the seal had laid and measured that, and computed his figures from the territory; but they do not lie all over the territory which he marked out.

Q. He measured all around, taking a given area?—A. The seals did not cover the whole area as thoroughly as he measured it. The only time he could make his measurement was after the seals had left. These were made then. You can not measure a rookery while the seals are lying there; but he observed the ground covered by the animals during the season and sketched out the details and where they were lying, and measured that after they had left there.¹

Q. Do you think under careful treatment and the present policy a large number might be readily taken off after a year with safety?—A. Possibly; but I would not suggest that they should increase the catch very fast. I should go carefully and observe the effect, increasing at the rate of 5,000, 10,000, or 15,000.

1880-1885.

H. A. Glidden (p. 29). Q. What was your estimate of the value of those rookeries?—A. I could not estimate them. The seals are there by the millions; you can not count them.

1869-1872.

S. N. Buynitsky (p. 12). Q. Have you any means of making an estimate of the probable number of fur seals that visit these islands and rookeries?—A. I saw an approximate estimate made by Mr. Elliott. I do not know that I ever indulged in any figures as to that. I simply expressed my impression here [examining report]; no; I see I did not indulge in any guessing.

Q. You say that Professor Elliott has made some estimate of that?—A. Yes, sir; I say I did not make any estimate. I do not think any estimate would be within a million or two. I think he puts them at 5,000,000, but it may be 3,000,000 or 7,000,000, as they are countless. It is a sight never to be forgotten by one who saw it, and it recurs sometimes in my dreams—that vast extent of beach covered by these animals.

THE BEGINNING AND PROGRESS MADE IN DRIVING FROM THE UNDISTURBED HAULING GROUNDS OF ST. PAUL.

The statement made by the natives to Messrs. Goff, Murray, Nettleton, and myself, that no commercial driving was made from Zapadne, West English Bay, Southwest Bay, Tonkie Mees, or from Polavina during the seasons of 1871-1874, and that it was not really begun in earnest until 1879,² is confirmed (independent of my own personal knowledge that no such driving was done during the seasons of 1872-1874) by the entries made in the Treasury agent's office journal, St. Paul village.

I made a careful examination last July of this, the only official record kept by the Government officers on either island of St. Paul or St. George. This journal on St. Paul is a large ledger-made book, which is opened there for the season of 1872, and continued without break from that time up to date of my examination. In this journal the Treasury agent in charge of the island makes a daily entry of the chief affairs of the day, i. e., the weather, doings of the natives in the village, and whites, employees of the lessees, etc.; arrival and departure of ships, steamers, etc.; and during the sealing season a daily record of the num-

¹ Mr. Morgan means well, but is painfully ignorant of my method of surveying the rookeries: See pages 21-24, *antea*.

² See p. 195, *antea*, Conference of natives with Government officers, etc.

ber of seal skins taken, together with a note of that place or places on the island where these skins were taken or driven from for that particular day's killing.

Extracting this record of the driving, as I have below for Polavina, involved a lengthy and patient reading of these rambling entries. To make sure that I overlooked nothing, I requested Mr. S. R. Nettleton, assistant Treasury agent, to make a similar examination and give me the dates. We agreed in our findings exactly as to Polavina; but the Zapadnié drives were so badly mixed up in this record after 1878, that it was not possible to make a truly accurate list, as in the case of Polavina.

But as Polavina was one of the several fine, large, hauling grounds, *never visited or driven from in 1872-1874, together with Zapadnié and Southwest Point*, this record of the driving there and its frequency in progression, etc, is valuable, independent of the testimony of the natives above referred to. With reference to this particular driving from Polavina, the natives, Artamanov and Booterin, in particular, claim to know that these drives, up to 1879, *were not taken from the Polavina hauling grounds back of that great rookery, but were gathered up anywhere between the old Polarina barrabkie and Tonkie Mees, or Stony Point*, and that *no driving from the great Polarina hauling plateau and Little Polarina up to Dalnoi was done until the new salt house was built at Stony Point in 1879*. These old native chiefs also averred that these early drives from those undisturbed reservoirs of 1872-1874 were made up exclusively of "big seals," i. e., smooth 4-year olds, or 11-pound skins.

The Treasury agent's official record of drives made from Polavina or Halfway Point.

[Extracted from the journal of the Treasury agent's office, St. Paul Village.]

1875:	1881:	1884:	1887:
June 16. <i>a</i>	June 17.	June 23.	June 16.
1876:	24.	July 7.	23.
June 14. <i>a</i>	25.	12.	30.
1877:	July 2.	14.	July 6.
June 13. <i>a</i>	4.	19.	14.
22. <i>a</i>	7.	1885:	21.
26. <i>a</i>	12.	June 15.	
1878:	13.	23.	1888:
June 24. <i>a</i>	18.	26.	June 15.
July 1. <i>a</i>	1882:	July 10.	28.
1879:	June 16.	16.	July 7.
June 10.	22.	24.	7.
14.	30.	1886:	14.
16.	July 8.	June 9.	19.
July 8.	1883:	17.	24.
1880:	June 6.	23.	1889:
June 21.	13.	25.	June 17.
28.	20.	30.	25.
July 5.	July 2.	July 6.	July 2.
17.	12.	12.	10.
1881:	17.	16.	17.
June 10.	1884:	21.	24.
	June 18.	26.	30.

Every one of these drives above noted made since 1879, embrace seals taken up from the entire region between Little Polavina down to Stony Point. The drive was finally rounded up and killed a short distance only from the Point, near the new salt house.

a Not taken from Polavina proper; someways south, including Stony Point.

Table showing the number of fur-seal skins taken from the Pribilof Islands since their transfer in 1867 from Russian to American ownership; also the tax, bonus, and rental paid.

Year.	Number of skins.	Tax, bonus, and rental paid.	Year.	Number of skins.	Tax, bonus, and rental paid.
1868.....	250,000		1881.....	99,766	\$316,984.75
1869 ^a	85,901		1882.....	99,922	317,295.24
1870.....	9,577	\$101,080.00	1883.....	75,000	251,875.00
1871.....	99,841	317,082.62 ¹ / ₂	1884.....	99,962	317,410.22 ¹ / ₂
1872.....	99,975	317,444.37 ¹ / ₂	1885.....	99,996	317,488.20
1873.....	99,744	316,927.00	1886.....	99,982	317,467.94
1874.....	99,998	317,494.75	1887.....	99,950	317,378.72 ¹ / ₂
1875.....	99,976	317,446.97 ¹ / ₂	1888.....	100,000	317,500.00
1876.....	89,964	291,155.50	1889.....	100,000	317,500.00
1877.....	75,526	253,255.75	1890 ^b	21,000	210,000.00
1878.....	99,980	317,461.39			
1879.....	99,962	317,410.22 ¹ / ₂	Total.....	2,206,057	6,208,916.17
1880.....	100,036	317,594.50			

^a The skins of 1869 were called "food skins," and carried over to 1870, are added to the catch of that year, the beginning of the lease making a seeming return for this year of 95,477 skins taken in the first year of the Alaska Commercial Company's lease; tax, \$2.62¹/₂ per skin taken, and rental of \$55,000 per annum. As this lease did not go into operation until August, 1870, the Secretary made a rebate of some \$22,000 rental.

^b Lease of the Alaska Commercial Company expired May 1, 1890. Lease renewed to North American Commercial Company, allowed to kill 60,000, but secured only 21,000; tax, \$9.62 for each skin taken, and \$60,000 rental per annum.

NOTE.—The foregoing figures only account for those skins taken and shipped from the islands between 1870 and 1890; of those taken in 1868 no time list has been kept. Nearly 140,000 "food skins" have been taken between 1870 and 1890 which have never gone from the islands—were wasted and destroyed. This should never occur again. The 1869 skins paid a tax of only \$1 per skin, and the rental for that year was only \$5,480.75.

Table showing the beginning of each sealing season on the islands of St. Paul and St. George, from 1870 to 1890, inclusive, and the number of fur seals accepted by the lessees up to July 20 of each year.

[From the Treasury agent's record, St. Paul Island.]

Year.	St. Paul.		St. George.		Total skins accepted.
	Season began—	Skins accepted.	Season began—	Skins accepted.	
1870 ^a					
1871.....	June 1	29,788	June 4	12,604	42,392
1872.....	1	65,499	3	21,563	87,062
1873.....	3	68,035	4	17,362	85,397
1874.....	3	88,058	1	8,554	96,612
1875.....	1	83,890	1	10,000	93,890
1876.....	3	69,367	1	10,000	79,367
1877.....	4	58,732	1	15,000	73,732
1878.....	8	78,570	10	16,709	95,279
1879.....	2	80,572	3	20,569	^b 101,141
1880.....	1	80,000	3	20,000	100,000
1881.....	6	80,000	9	20,000	100,000
1882.....	2	80,000	6	20,000	100,000
1883.....	4	60,101	4	11,123	71,224
1884.....	3	83,092	4	11,152	94,244
1885.....	3	70,451	1	15,000	85,451
1886.....	4	72,120	8	13,335	85,455
1887.....	1	77,389	9	13,381	90,770
1888.....	2	73,808	6	13,187	86,995
1889.....	1	68,485	4	10,138	78,623
1890.....	6	^c 16,833	2	^c 4,112	^c 20,945

^a No record.

^c Taken by North American Commercial Company.

^b Accepted, but not shipped in one year; balance carried over.

Table showing the amount of earnings received by the natives of St. Paul Island for taking and curing skins and the distribution of said earnings—the total number of fur-seal skins shipped from St. Paul Island by the Alaska Commercial Company from 1870 to 1889, inclusive.

[Report of Charles J. Goff, United States Treasury agent, July 31, 1890.]

Year.	Total fur-seal skins shipped.	Paid to natives for taking and curing skins.	Paid to natives for general labor.	Total fur seals killed.	Rejected stogy skins.
1870	6,017	\$2,406.80		6,017	
1871	76,134	30,853.60	\$580.40	77,925	431
1872	74,941	30,416.00	221.97	76,698	1,536
1873	74,485	29,597.80	76.80	76,488	736
1874	89,924	29,849.60	217.53	97,932	596
1875	89,687	30,098.00	276.03	91,215	451
1876	80,000	31,848.20	113.40	79,199	1,979
1877	60,199	23,981.60	146.40	62,813	1,088
1878	82,000	32,654.00	a 2,218.38	83,034	981
1879	80,000	31,903.60	b 1,910.86	86,592	1,977
1880	80,000	31,889.00	215.40	80,276	275
1881 c	79,905	31,825.60	54.00	81,501	1,341
1882	80,000	31,750.80	250.50	81,420	1,414
1883	60,000	23,896.80	97.00	61,987	1,775
1884	85,000	33,785.60	240.00	86,013	941
1885	84,995	33,933.00	12.00	86,364	1,182
1886	85,000	33,941.80	134.00	85,689	635
1887	85,000	33,839.80	203.40	85,629	590
1888	85,000	33,834.60	15.60	85,271	196
1889	85,000	33,744.80	15.00	85,053	
Total	1,523,287	596,056.00	7,005.67	1,557,116	18,124

A GIFT DISTRIBUTION OF THESE NATIVES' EARNINGS ANNUALLY MADE BY THEMSELVES.

Year.	Received by St. Paul church.	Received by St. Paul priest.	Received by St. Paul widows.	Received by St. Paul aged and sick.	Received by St. Paul church for translation of church service.	Received by chiefs as salary.	Received by Oona-lashka church.	Received by Oona-lashka priest.
1870	\$150.00		\$77.20					\$109.30
1871	910.16		614.82					d 455.08
1872	902.45	\$451.22						
1873	870.62	435.11						
1874	859.06	429.53						
1875	432.07	432.07						
1876	757.12						\$432.07	
1877	621.50	621.48					378.40	756.80
1878	855.78	855.78	500.00				310.74	
1879	822.24	821.50	200.00			\$300.00		855.78
1880	813.10	813.10	150.05	\$200.00	\$1,219.65	450.00	450.00	
1881 c	857.66	857.66			428.83	225.00		
1882		1,000.00	2,650.00					
1883		750.00	50.00			225.00		
1884		1,000.00	300.00			300.00		
1885		1,000.00		1,000.00		300.00		
1886		1,000.00	200.00	600.00		200.00		
1887		1,000.00	1,500.00			200.00		
1888		1,000.00	150.00			200.00		
1889		1,000.00	2,500.00			200.00		
Total	d8,851.76	d13,467.45	d8,892.07	d1,800.00	d1,648.48	3,050.00	d1,571.21	d2,176.96

a One thousand twenty-two dollars and ninety-two cents received by natives for making oil, under head of general labor.

b One thousand six hundred and sixty-six dollars and six cents received by natives for making oil, under head of general labor.

c Fifty dollars received by school teacher.

d Four hundred and fifty-five dollars and eight cents received by Dr. Kramer; first-class share.

Summary showing the total number of fur seals killed for skins on the islands of St. Paul and St. George by the Alaska Commercial Company from 1870 to 1889, inclusive; also the number of large young seals and pups killed for natives' food on the islands of St. Paul and St. George from 1870 to 1889, inclusive; the total number of fur-seal skins shipped from St. Paul and St. George islands by the Alaska Commercial Company from 1870 to 1889, inclusive; the amount of earnings received by the natives of St. Paul and St. George for taking and curing skins and the distribution of said earnings.

Fur seals killed for skins on the islands of St. Paul and St. George by the Alaska Commercial Company, and also for natives' food, from 1870 to 1889, inclusive.....	1, 877, 030
Fur-seal skins shipped from St. Paul and St. George by the Alaska Commercial Company from 1870 to 1889, inclusive.....	1, 840, 364
Fur seals rejected as stagy at St. Paul and St. George from 1870 to 1889, inclusive.....	20, 393
Fur seals destroyed on St. Paul and St. George in securing catch from 1870 to 1889, inclusive.....	16, 273
Total.....	1, 877, 030
Earnings received by natives of St. Paul and St. George from 1870 to 1889, inclusive.....	\$755, 672. 87
Donations by natives of St. Paul and St. George from 1870 to 1889, inclusive.....	50, 608. 11
Paid to chiefs on St. Paul Island (St. George is included in donations) ..	3, 050. 00
Paid to St. George men for work done on St. Paul Island.....	25, 780. 40
Paid to Kodiak men for work done on St. Paul Island.....	680. 00
Unaccounted for.....	19. 25
Paid to school teacher.....	50. 00
Expended by the natives of St. Paul and St. George from 1870 to 1889, inclusive.....	643, 963. 10
Balance due to natives May 24, 1890, now held by the North American Commercial Company.....	28, 117. 02
Balance held by Alaska Commercial Company for Mrs. Melevidoff.....	3, 404. 99
	755, 672. 87
Fur-seal pups (five months old) killed for natives' food on— St. Paul and St. George islands from 1870 to 1889, inclusive, total ..	92, 864
(Proportioned between the islands as follows)— St. Paul Island from 1870 to 1889, inclusive.....	63, 804
St. George Island from 1870 to 1889, inclusive.....	29, 060
	92, 864

(Report of Charles J. Goff, United States Treasury agent, July 31, 1890.)

Daily statement of fur seals killed on St. Paul Island, Alaska, during the sealing season ending July 20, 1890.

Date.	Rookery.	Number of seals killed for natives' food.				Number of seals killed by lessees for skins.					Aggregate.		
		Large young seals.	Skins accepted by lessees.	Skins rejected.		Accepted.		Rejected.			Skins accepted.	Skins rejected.	Total seals killed.
				Under size.	Cut.	Prime.	Second class.	Under size.	Cut.	Total.			
1890.													
May 28	Southwest Bay.....	119	115	3	1	115		1	5	115	4	119	
June 6	Reef.....					115		1	1	115	1	116	
11	do.....					539	55	35		539	35	574	
13	Tolstoi.....					181	1			182		182	
16	Reef.....					315	1	1	2	315	2	317	
17	Northeast Point.....					16				16		16	
17	Halfway Point.....					167				167		167	
18	Tolstoi and Middle Hill.....					270		4	4	270	4	274	
18	Northeast Point.....					78				78		78	
20	Reef and Lukannon.....					339				339		339	
20	Northeast Point.....					438				438		438	
21	Southwest Bay.....					290		2	2	290	2	292	
21	Northeast Point.....					96				96		96	
23	English Bay and Lukannon.....					515	3	3	3	518	3	521	
23	Northeast Point.....					176	2	1	1	178	1	179	
24	Reefs and Zoltoi.....					414	10	2	12	414	12	426	
24	Northeast Point.....					202	3			205		205	
25	Halfway Point.....					263	3		3	263	3	266	
25	Northeast Point.....					164	2			166		166	
26	Southwest Bay.....					114	2	1	1	116	1	117	
27	English Bay and Middle Hill.....					374	2	19	1	376	20	396	
27	Northeast Point.....					225	5			230		230	
28	Reef.....					205	1			206		206	
28	Northeast Point.....					79				79		79	
30	Tolstoi, English Bay, Middle Hill, and Ketavie.....					206	1	2	2	207	2	209	
30	Northeast Point.....					97	1			98		98	
July 1	Reef.....					246				246		246	
1	Northeast Point.....					130	1			131		131	
2	Halfway Point.....					240		2	2	240	2	242	
2	Northeast Point.....					96				96		96	
3	Southwest Bay.....					181	2		2	181	2	183	
3	Northeast Point.....					180				180		180	
4	Tolstoi, English Bay, and Middle Hill.....					472	19	3	22	472	22	494	
4	Northeast Point.....					318	3			321		321	
5	Reef.....					524	1	1	1	525	1	526	
5	Northeast Point.....					74				74		74	
7	English Bay, Middle Hill, Tolstoi, Lukannon, and Ketavie.....					400	11		11	400	11	411	
7	do.....					400	11		11	400	11	411	
7	Northeast Point.....					336				336		336	
8	Halfway Point.....					257	3	1	4	257	4	261	
8	Northeast Point.....					373	1			379		379	
9	Southwest Bay.....					160	2	1	1	162	1	163	
9	Northeast Point.....					271				271		271	
10	Reef.....					373	1	2	2	374	4	378	
10	Northeast Point.....					112				112		112	
12	English Bay, Middle Hill, Tolstoi, Lukannon, and Ketavie.....					624	5	4	4	629	4	633	
13	Halfway Point.....					211				211		211	
13	Northeast Point.....					641		17	17	641	17	658	
14	Reef.....					104				104		104	
15	English Bay, Middle Hill, Tolstoi, Lukannon, and Ketavie.....					315				315		315	
15	Northeast Point.....					245				245		245	
16	do.....					311	1		1	311	1	312	
17	Polavina, Lukannon, and Ketavie.....					369	3			372		372	
17	Northeast Point.....					485				485		485	
18	do.....					405				405		405	
18	Zapadni.....					80			156	80	156	236	

Daily statement of fur seals killed on St. Paul Island, Alaska, during the sealing season ending July 20, 1890—Continued.

Date.	Rookery.	Number of seals killed for natives' food.				Number of seals killed by lessees for skins.					Aggregate.		
		Large young seals.	by Skins accepted lessees.	Skins reject-ed.		Accepted.		Rejected.			Skins accepted.	Skins rejected.	Total seals killed.
				Under size.	Cut.	Prime.	Second class.	Under size.	Cut.	Total.			
1890.													
19	Reef and Zoltoi.....					547	2	3	4	7	549	7	556
19	Northeast Point.....					446					446		446
20	English Bay, Middle Hill, Tolstoi, Lukannon, Ketavie, and Point Rocky.....					752	6	18	4		758	22	780
20	Northeast Point.....					507	2	47			509	47	556
	Total.....	119	115	3	1	16,783	50	185	50	344	16,833	391	17,224

CHAS. J. GOFF,
United States Treasury Agent in Charge.

Daily statement of fur seals killed on St. George Island, Alaska, during the sealing season ending July 20, 1890.

Date.	Rookery.	Number of seals killed by lessees for skins.				Aggregate.		
		Accepted.		Rejected for other reasons— died on the road.	Total.	Skins accepted.	Skins rejected.	Total seals killed.
		Prime.	Second class.					
1890.								
June 2	North	71			71	71		71
16	East	214	4		218	218		218
18	North	113	4		118	117	1	118
19	East and Little East	179	2		181	181		181
20	Zapadnie	394			394	394		394
23	Starry Arteel and North	162	2		164	164		164
25	East and Little East	182	2		184	184		184
28	Starry Arteel and North	188	1		189	189		189
30	Zapadnie	189			189	189		189
July 1	East and Little East	145		4	149	145	4	149
3	Starry Arteel and North	234		4	238	234	4	238
5	East and Little East	56	1		57	57		57
7	Zapadnie	57		1	58	57	1	58
8	East and Little East	23		1	24	23	1	24
9	Starry Arteel and North	183	3	7	193	186	7	193
11	East	59		1	60	59	1	60
12	Starry Arteel and North	102		1	103	102	1	103
14	Zapadnie	53			53	53		53
15	East	131		1	132	131	1	132
16	Starry Arteel and North	119			119	119		119
18	East	71			71	71		71
20	Starry Arteel and North	634	7		641	641		641
20	Zapadnie	527			527	527		527
	Total	4,086		21	4,133	4,112	21	4,133

NOTE.—One rejected skin was given to the chief and the remaining (20) were salted down in the salt house till further orders.

JOSEPH MURRAY,
First Assistant Agent, Treasury Department.

Daily comparison of the killing of fur seals on the island of St. Paul, seasons of 1889 and 1890.

[From report July 31, 1890, of Charles J. Goff, United States Treasury agent in charge.]

VILLAGE.

Date.		Number killed.	Date.		Number killed.
1889.			1890.		
June	5.	201	June	6.	116
	10.	120		11.	574
	12.	947		13.	182
	14.	762		16.	317
	15.	340		17.	167
	17.	895		18.	274
	18.	1,161		20.	339
	19.	1,561		21.	292
	20.	253		23.	521
	22.	1,353		24.	426
	24.	2,578		25.	266
	25.	979		26.	117
	26.	1,314		27.	396
	27.	311		28.	206
	28.	1,349		30.	209
	29.	1,038			
Total		15,162	Total		4,402
July	1.	1,023	July	1.	246
	2.	834		2.	242
	3.	1,841		3.	183
	4.	1,716		4.	494
	5.	1,255		5.	526
	6.	1,302		7.	411
	8.	814		8.	261
	9.	1,314		9.	163
	10.	654		10.	378
	12.	2,004		12.	633
	13.	1,006		13.	211
	15.	3,085		14.	104
	16.	1,911		15.	315
	17.	1,931		17.	372
	18.	2,046		18.	236
	19.	2,017		19.	556
	20.	1,913		20.	780
Total		6,666	Total		6,111

NORTHEAST POINT.

1889.			1890.		
June	17.	1,054	June	17.	16
	18.	1,270		18.	78
	19.	494		20.	438
	21.	1,205		21.	96
	24.	754		23.	179
	25.	1,407		24.	205
	26.	441		25.	166
	27.	844		27.	230
	28.	479		28.	79
	29.	355		30.	98
July	1.	1,200	July	1.	131
	2.	968		2.	96
	4.	1,550		3.	180
	5.	1,524		4.	321
	6.	376		5.	74
	8.	914		7.	336
	9.	641		8.	379
	10.	800		9.	271
	13.	793		10.	112
	15.	1,838		13.	658
	16.	1,156		15.	245
	17.	948		16.	312
	18.	1,282		17.	485
	19.	834		18.	405
	20 a.	243		19.	446
				20.	556
Total		15,076	Total		5,007

a Two hundred and forty-three this day to make the full quota of 100,000.

AUTHENTIC STATEMENT OF VALUE OF SEALING PLANT ON THE
PRIBILOV ISLANDS.

Items of the summary of the cash settlement made by the Alaska Commercial Company with the North American Commercial Company, signed and dated on St. Paul Island, Pribilof Group, May 24, 1890, in accordance with a mutual agreement made March 12, 1890, at Washington, D. C., in the United States Treasury Department, by which the full transfer of the entire sealing plant of the old lessees to the undivided possession of the new lessees was amicably effected.

The Alaska Commercial Company was represented by Mr. Neumann, and the North American Commercial Company by Mr. Tingle, and I acted as umpire, as per your instructions, bearing date the 16th April, 1890. We arrived at St. Paul Island on the 21st May, and immediately commenced to take stock. After several days' labor the business was well in hand, and we proceeded to St. George Island, per steamer *Dora*, and made a complete inspection and inventory of all the property there belonging to the Alaska Commercial Company. After our return to St. Paul there was one difference referred to me, and satisfactorily adjusted: then the entire business was settled by the representatives of their respective companies.

(Report of Charles J. Goff, United States Treasury agent, July 31, 1890.)

(Copy of the duplicate copy of original summary.)

Recapitulation of merchandise and property transferred by the Alaska Commercial Company to the North American Commercial Company, in accordance with the agreement of March 12, 1890.

At St. Paul Island:

Merchandise	\$14,180.61	
Cash	939.90	
Tools and implements	2,008.79	
Household furniture	3,098.27	
School books, desks, and bells	257.00	
Boats, bidarrahs, and steam launch	2,570.00	
Live stock	1,395.00	
Buildings, improvements, and telephone	40,855.00	
		\$65,304.57

At St. George Island:

Merchandise	7,909.68	
Cash	941.50	
Tools and implements	505.81	
Household furniture	1,007.12	
Boats and bidarrahs	750.00	
Live stock	562.00	
Buildings and improvements	14,255.00	
		25,931.14

Grand total..... 91,235.71

LIABILITIES.

Due to natives and others at St. Paul	11,733.70	
Bank account of natives	12,123.93	
Due natives and others at St. George	6,979.54	
		30,837.17

Net balance due Alaska Commercial Company..... 60,398.54

[SEAL.]
[SEAL.]
[SEAL.]

RUDOLPH NEUMANN,
GEO. R. TINGLE,
CHARLES J. GOFF,
Arbitrators.

The above cash settlement shows that the entire sealing plant of the Alaska Commercial Company, such as buildings, tools, live stock, boats, household furniture, and improvements, was sold to the new lessees for \$67,264.02. This was its full cash value.

The transfer, as above stated, of merchandise and cash represented no cost to the new lessees, since the former was native store goods: was all salable, and was soon resold to the natives for a slight advance over the figures given above. The cash is that coin (silver dollars and half dollars chiefly) which is kept in circulation by the company among the people, plus their credit books at the village stores.

Table showing the number of fur-seal skins taken from the Russian hauling grounds on the Commander Islands, Bering Sea, since 1871 and shipped to the markets.¹

Year.	Robbens Island.	Bering and Copper islands.	Total.	Year.	Robbens Island.	Bering and Copper islands.	Total.
1871.....	.....	3,614	3,614	1882.....	4,106	40,514	44,620
1872.....	.....	29,356	29,356	1883.....	2,019	26,650	28,669
1873.....	2,694	27,710	30,404	1884.....	3,819	50,034	53,853
1874.....	2,414	28,686	31,300	1885.....	1,838	41,737	43,575
1875.....	3,127	33,152	36,279	1886.....	.....	54,591	54,591
1876.....	1,528	25,432	26,960	1887.....	.....	46,347	46,347
1877.....	2,949	18,584	21,533	1888.....	.....	47,362	47,362
1878.....	3,142	28,198	31,340	1889.....	.....	52,755	52,755
1879.....	4,002	38,748	42,750	1890.....	.....	52,502	52,502
1880.....	3,330	45,174	48,504				
1881.....	4,207	39,314	43,521	Total.....	.....	.....	769,863

¹ Bering and Copper islands constitute what is known as the Commander group. Robbens Reef or Island is a small islet, or rock, rather, about 30 miles off shore from the east shore of Sakhalin Island, in the Okotsk Sea; it belongs to Russia also. These skins were all taken under the lease to Hutchinson, Kohl Philippen & Co., and paid a tax of \$1.50 to the Imperial treasury for each skin taken. This lease expired in November, 1890, and at the date of this report it is not known definitely as to its renewal.

Under Russian management the yield from these islands I have the record of, as follows:

1862.....	4,000	1865.....	4,000	1868.....	12,000
1863.....	4,500	1866.....	4,000	1869.....	24,000
1864.....	5,000	1867.....	4,000	1870.....	24,000

No account of the proportion that Robbens Reef gives to this total for each year between 1862 and 1870 has been found by the writer.

THE PELAGIC CATCH FROM 1886 TO DATE.

[With the year 1886 this work of hunting fur seals in the open waters of the ocean by white men, outfitting vessels, and hiring hunters, practically begins: it is the first year that the British hunters ever got into Bering Sea.]

Table showing the number of fur-seal skins taken by the pelagic sealers and poachers in the North Pacific Ocean and Bering Sea.

Pelagic and poaching catch of 1886:	Skins.
Landed at Victoria, British Columbia, by British sealers.....	25,538
Landed at Victoria, British Columbia, by American sealers.....	5,000
Landed at San Francisco, Cal., by American sealers.....	2,944
Seized in Bering Sea by the United States Revenue-Marine cutter <i>Rush</i> ..	2,177
Total.....	35,659
Pelagic and poaching catch of 1887:	
Landed at Victoria, British Columbia, by British sealers.....	17,078
Landed at Victoria, British Columbia, by American sealers.....	2,536
Landed at San Francisco, Cal., by American sealers.....	6,502
Seized in Bering Sea by cutters <i>Rush</i> and <i>Bear</i>	12,345
Total.....	38,461

Pelagic and poaching catch of 1888:

Landed at Victoria, British Columbia, by British sealers.....	19,011
Landed at San Francisco, Cal., by American sealers.....	5,348
Total	24,359

Pelagic and poaching catch of 1889:

Landed at Victoria, British Columbia, by British and American sealers..	30,538
Landed at San Francisco, Cal., by American sealers.....	1,800
Seized in Bering Sea by cutters <i>Bear</i> and <i>Rush</i>	2,531
Total	43,869

Pelagic and poaching catch of 1890:

Landed at Victoria, British Columbia, by British and American sealers..	38,404
Landed at San Francisco, Cal., by American sealers.....	7,228
Total	45,632

Only in a general way, at this writing, can the relative number of skins taken in Bering Sea be declared as distinct from the North Pacific catch. In 1886 the Bering Sea catch can be said to be very near 20,000; in 1887, 20,000; in 1888, 19,000 (no seizures were made that year); in 1889, 25,500; in 1890, 16,000 (no seizures).

The short supply, together with the threatened extermination of the fur seal, made the London sale a very lively one last October. The following citation from the New York Fur Trade Review for December, 1890, is interesting:

OCTOBER SALES.

[Report by Messrs. Blatspiel, Stamp & Heacock.]

The sales covered six days and comprised a larger variety of furs than previously offered in the autumn. Of course the chief item has been salted fur seals, sold on the 27th instant, and the various catalogues have contained 20,994 Alaska, 42,721 Copper Island, 20,117 Northwest Coast, 9,649 Lobos, and 1,873 Cape of Good Hope, etc., making a total of only 95,354 (as against 126,217 last year), and this total was only brought together now by including the larger part of the catch from Copper Island, which were heretofore always sold in the following spring. The attendance for the seal sale was large, but for the other furs there was a smaller number of buyers from Germany present than last year, and buyers generally were not eager.

As soon as the small catch of Alaska by the new company became known early in September, the fur-seal market became excited and values speedily advanced. It was mentioned that the herds on the seal islands had been greatly diminished by the indiscriminate slaughter of females on the open seas, and therefore the catch for next year on the Pribilof Islands could not now be forecast; it might again have to be very small.

The quality of the 20,994 Alaska was excellent and chiefly large sizes, the great number of small skins which we have had the past few years being conspicuously absent. Of course, for the Alaska the demand was far greater than the supply, and consequently prices advanced rapidly and greatly, averaging about 90 per cent all round. Separated, the ratio of advance was: On 659 middlings and smalls, 75 per cent; on 2,939 smalls, 65 per cent; 5,144 large pups, 85 per cent; 7,684 middling pups, 100 per cent; 3,752 small pups, 130 per cent, and 71 extra small pups, 100 per cent. There were exceptionally few (745) low and cut skins, which were also in good demand. Nearly all were secured for America.

The 42,721 Copper Island skins were also of somewhat superior quality, but having already somewhat improved last March, they now sold at an average advance of fully 50 per cent, being nearly level in advance in all the sizes; these were also largely secured for America, but part were taken by European dealers and furriers.

The Northwest Coast skins were of average fair quality, and ranging lower in prices, were more appreciated by the English trade; the advance, however, proved about 60 per cent on rates current last spring.

The Lobos, although the quality was on the whole nothing choice of the sort, ranged nearly 50 per cent dearer than last year. The small low skins hardly advanced in the same ratio; many were taken for France.

The Cape of Good Hope also participated in the general advance.

Suggestions for the new rules that should be adopted and enforced by the Secretary of the Treasury for the land killing, in lieu of the existing order and conduct of affairs, whenever said land killing is again permitted by the Government.

REVISED REGULATIONS FOR THE DRIVING AND KILLING OF MALE FUR SEALS ON THE
PRIBILOV ISLANDS OF ALASKA.

1. No herd of male or killable fur seals shall be driven over a greater distance than one-half mile from the hauling ground upon which it is found and from which it is taken by the drivers.

2. At a distance of a half mile from the borders of the several hauling grounds of the killable fur seals on the Pribylov Islands, and well back from the sea margin, killing grounds shall be established; so that each and every locality known on the islands of St. Paul and St. George (of the Pribylov group) as a hauling ground shall have its own slaughtering field, and upon which all seals killed for tax and shipment, driven from said localities, must be killed and skinned.

3. All male fur seals that are driven in these herds up to these killing grounds from the hauling grounds adjacent, as above specified in regulations 1 and 2, shall be killed without culling out any save those which are under 1 year of age, known as "short yearlings," and over 4 years of age, known as "wigs." These two classes, under and over age, may be culled out and rejected, and those only.

These regulations, when enforced, will prevent any injury from re-driving and culling the herds. Their language is too plain for any Government agent to fail to understand, and their evasion is only possible by the collusion of everybody on the islands—natives, officials, and employees of the lessees—a fairly improbable event, and one that can not take place without swift detection, even if such collusion were undertaken.

The topography of the islands makes the location of these killing grounds, as above ordered, entirely practicable and proper.

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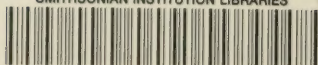
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